THE AMERICAN FARMER

ESTABLISHED 1819

NINTH SERIES. BALTIMORE, MD., NOVEMBER 15, 1883. VOL. II.—NO. 22.

The Analysis of Soils.

Dr. Sturtevant, in a recent bulletin from the New York Agricultural Experiment Station, gives the following valuable and interesting statements. Among the most frequent inquiries made by visitors at the station is, whether we undertake the analysis of soils. It seems advisable, therefore, to give a few explanations to the public of why we do not undertake soil analyses.

A cubic foot of soil in the average condition of moisture weighs from 70 to 100 pounds. The soil taken ten inches deep from an acre of land would therefore weigh about 3,000,000 pounds.

For the purpose of analysis, in the ordinary method, about 1-10 of an ounce of this soil would be taken, and this represents about 1-480,000,000 part of an acre.

If one ton of superphosphate, containing 10 per cent. of phosphoric acid, were thoroughly mixed with the upper 10 inches of an acre of soil we should have added 200 pounds of phosphoric acid to 3,000,000 pounds of soil, or one part to 15,000; that is to say, that each 15,000 pounds of soil would contain one pound of the added phosphoric acid. As but 1-10 of an ounce of this would be used for analysis, this 1-10 of an ounce would contain but 1-15,000 added parts of phosphoric acid, and this proportion would be represented by the percentage figures 00.-0066, or .0000066 of an ounce.

This will be better understood if we repeat that in percentage figures it would require the addition of over 300 pounds of the superphosphate to the acre to change the third decimal figure of the analysis by a unit. The corollary of this is that as the chemist rarely works in this class of analyses beyond the second decimal figure, the addition of an ordinary fertilization, or that sufficient to make the difference between a good and bad crop, would not be detected.

We can moreover state the practical improbability of taking two samples of soil from different places in the same field which would analyze alike within even the second decimal figure.

In the beginning of the application of science to agriculture, the public attention was strongly attracted by the theory that a chemical analysis of soil was about to offer a sure means for determining definitely the condition and the needs of our soils, and various charlatans disseminated the idea of this possibility for purposes of their own, in order to secure the privilege of prescribing and furnishing the diet required for each field of the farm. Those who should have known better were loth to appear in contradiction, for early science is presumptuous, and not having as yet determined its strength or its weakness, would attempt by a single bold and daring effort work far beyond its capacity.

At the present time it is universally recognized by men of scientific training that the analysis of the soil for the purposes of the individual farmer can offer no solution to the problem of what fertilizer or how much to apply.

While denying that analyses of soils can give us definite information concerning their productiveness, and while asserting that the teachings of experience have shown that in most cases there is no direct relation between the present analysis-value of soils and their present agricultural-value; or, otherwise expressed, that analyses cannot show with certainty whether or not a soil is in condition to yield a full crop for the time being, yet we would not deny that for the purposes of science such analyses may possibly be of some benefit as offering us a judgment of its general character, the mode of its occurrence or of injurious substances which at times it may contain. It may also be of avail to indicate to us the changes produced in the soil through the agencies included in the word cultivation.

The soil is never in a stable condition. It is varying continually through the action of the atmosphere, of temperature, and moisture. Its condition in respect to soluble and insoluble elements is in continual flux and reflux. Disintegration relieves plant food, moisture and capillarity transfer it, heat and frost also have their action, while the conditions of cultivation come into play as a disturbing factor, not only in their mechanical relations, but as well in the removal of soluble material through the harvesting of the crops. The nitrates of the soil are subject to leaching, and ammonia and nitric acid are also added to the soil through the agency of rains. Phosphoric acid is changing from the insoluble to a more soluble condition, and again reverting back. The various elements which go to feed the plants are changing their position and condition in the soil, according to the chemical and physical laws. In respect to crops, plants themselves have different powers by which they are enabled to appropriate the plant food. The various actions and reactions between the plants and the soil are such that agricultural soil requires the elements of plant food in large portions before the plant can be able to appropriate sufficient for its needs. A soil which contains the plant food sufficient for hundreds of crops, as determined by analysis, may yet be agriculturally barren through the inability of the plants to reach the elements which, although absolutely in large quantity, yet are relatively insufficient in the regions accessible to the plant. In such a case the addition of a small quantity of fertilizer may change the condition from agricultural barrenness to fertility. The physical conditions of the soil also assume a great importance, oftentimes in their relations to atmospheric changes deciding, for the location, whether the plant shall grow or fail, irrespective of the quantity of the plant food contained within the soil.

THE development of American agriculture is unequalled in the history of any other nation. The wheat acreage of the United States has increased from 21,000,000 acres in 1871, to 38,000,000 in 1881, and the corn acreage during the same period from 33,000,000 acres to 64,000,000. Cotton has doubled, the crop of 1871 being 3,000,000 bales, against 6,600,000 in 1881.

Top Dressing Potatoes.

The Ohio Agricultural Experiment Station made some interesting and instructive experiments with different fertilizers as top-dressings upon potatoes. Plots were accurately measured, and, so far as possible, each fertilizer was applied so that its effect or non-effect could be readily determined. Some of the materials tried seemed to subserve no good purpose, but were a positive injury. The fertilizers tried were wood ashes, coal-ashes, lime, gypsum, salt, hen-manure, and a mixture of ashes and plaster, and one of ashes and lime. They were applied May 20th, when the potatoes were about two inches above the ground.

It was a rough test—tried upon a crop that was planted without special reference to experimental work; the main object in view being to learn something of the deficiencies and needs of this part of our grounds. The application was rigorous, and the following indications are among the clearest and most obvious: 1. Good hard-wood ashes are one of the best fertilizers that can be applied to the potato. They gave an increase over the natural yield of the land such as to make their use, at the rate of seventy-five bushels per acre, at twenty-five cents per bushel, profitable. 2. A mixture of ashes and plaster—ten parts by weight of the former to one of the latter—gave about the same results, while plaster alone had no good effect. 3. No advantage whatever was derived from the use of lime, which seems to indicate that there is already a sufficiency of that material in our soil. 4. Salt must be used with caution; anything over five bushels per acre did more harm than good; up to this amount its use will generally be attended with profit. 5. Coal-ashes had a most marked beneficial effect. Spread thickly between the rows and thoroughly incorporated with the soil, their mechanical effect was greater than the chemical effect of any of the fertilizers tried. 6. Hen-manure, made fine and scattered freely close to the rows, gave excellent results also. It appeared to be of about the same value as wood-ashes. The following result is given:

Early Ohio—wood-ashes	170	bu	per acre.
" —hen-manure	181	"	" "
Snow-Flake—wood ashes	242	"	" "
" —hen manure	235	"	" "

The object of these brief notes is to induce careful observation, and to incite experiment.

The fertilizers named above can be easily and cheaply obtained in many parts of the State; that they can generally be used with profit I believe. Every farmer should give them a fair, careful trial, and await the result. If they seem to do no good, do not at once condemn, but vary the time and method of application and try again. If good results do not then follow, it may be reasonably concluded that for your soil and climate they are not the fertilizers needed. Whatever the results of individual experiments may be, it will still be true that in many localities wood-ashes, lime, gypsum, and salt (some one or more of these) are among the best and cheapest fertilizers known.

Making Compost.

Making compost and making manure are two different things. It was once considered that only rotted turf was compost, but farmers now prepare compost from every available substance. What is best known as compost on the majority of farms at the present, is made by the mingling of manure with other matter, the whole to be finally brought to a fine, well-rotted state.

Barnyard manure, if dropped into a cellar, with the liquids flowing off in another direction, would soon become tough and elastic, and a fork could no more enter it than it could a bale of cotton, but by mixing the manure with an absorbent, and making the mass in the shape of a mound, the volatile matters are retained, while the manure is more or less disintegrated and broken up. The importance of utilizing the liquids is also taken into consideration while making compost, as they are not only absorbed, but assist in rotting the solids. Moisture being almost absolutely essential to the decomposition of the heap, it is best to apply the liquids from the stable. Compost admits of the use of a large amount of absorbent material, for, along with the solid and liquid manures from the stable, all the dirty water, soapsuds and other refuse matter should be added to it, nothing being omitted that is supposed to contain fertilizing matter of any kind.

The compost, as stated before, should be very fine. Long straw and whole cornstalks are out of place in the compost heap, but answer admirably when passed through the fodder-cutter and well saturated with liquid manure, which quickly rots them when so prepared. Such coarse material belongs to the manure heap. Leaves make an excellent absorbent material, and even road dust is valuable, not for its fertilizing qualities so much as for its power of absorbing and retaining liquids. But one of the best materials from which to make compost is marl, which is, possibly, cheaper than anything else for the purpose, considering its chemical value. As it is almost as fine as dust and incorporated with manure and other matter, it not only assists in saving the valuable gaseous substances, but adds, in itself, fertilizing elements that are often lacking in the manure to a certain degree. Although marl contains no ammonia, it contains quite a fair percentage of phosphoric acid and lime, all of which, though partially insoluble in the marl, are changed in condition by the chemical action of the compost heap. If marl were a soluble material its price would be high, but as it must be made available by being composted, it is one of the cheapest items in the whole list of fertilizers.

To properly make the compost heap, put down a layer of marl, then a layer of manure, then any other material that can be raked, scraped and gathered up. Pour over it the liquids, but not too profusely, as they may soak through it, if the heap is small, and flow off. After the lapse of a week mix the mass well together and place it over a layer of marl. This is the beginning of the general

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heap, and each successive addition should be treated likewise—that is, first thoroughly mix the ingredients in small heaps before placing them on the larger ones. The compost heap must flever become dry but should be protected from the sun and rain. If the whole mass is occasionally worked over, so much the better. Just before applying it to the soil it should be made very fine, if required, and a little plaster sprinkled through it while it is is being handled. Should marl not be obtainable use dry earth instead. Do not add lime to the heap at any time, nor wood ashes, as these articles may do more harm than good unless the heap contains a large amount of absorbent matter and is kept moist all the time.

The value of compost is largely due to its retention of that which is commonly wasted; its facility for being hauled and spread by reason of being fine; its thorough decomposition without "fire-fanging,' which permits of its use on all crops and at any time, and its being a factory within which a large amount of insoluble material can be made available as plant food.—*Philadelphia Record.*

When and How to Sell Crops.

The farmer who knows when and how to sell his crops to the best advantage, says the *Husbandman*, is more fortunate than his fellows who lack such knowledge. There can be no definite rule by which to insure always the best prices, but there are certain general rules, well established, that may be observed with profit. The most important of these is that a crop fitted for the market should be sold at a time which will best suit the seller. That is to say, if he permits himself to be hampered in such a way as to allow the buyer to make terms, both as to price and time of delivery, he is practically without voice in the matter.

The first requisite in entering the market with reasonable expectation of obtaining prices for products that will afford profit on the labor of producing them is, that they be of good quality and deliverable in good order. A farmer who has a crop of wheat threshed soon after harvest, well cleaned and stored in bins, is able to exert some influence in fixing the price. If he has a desirable crop there is in it something to tempt the buyer, an inducement to reach the highest figure. Now, if added to this there is safe confidence in the integrity of the farmer his profits in sales are still further augmented. What is regarded as integrity in this case is that high character of the farmer which inspires confidence that the crop shall be what it appears to be, clean at the top, in the middle and at the bottom, that the bins as they show give true ideas of condition and quality. Then the same guaranty comes in with beneficial effect regarding delivery; the buyer says:

"I want to use this crop just ten days from this time; can I have it then?"

If the farmer's word be as good as his bond, when he says "yes," that should mean that the crop will be delivered promptly upon the time specified with no possibility of failure, barring such accidents as are beyond human control.

It is true that careful observance of these requirements will not always secure the prices necessary to bring profit, but it will secure the best prices that are paid at that time.

Then comes the question about delay, about holding products for better prices. Of this personal judgment must be the sole guide. Many a farmer, not satisfied with current rates for his products, holds without definite ideas about chances; without informing himself what influences are exerted, to advance or depress prices, simply waiting, Micawber-like, for something to turn up. There is no wisdom in this course. The farmer who has no understanding about the markets except as prices are quoted to him, will usually do the best when he sells at a price that affords profit, because he does not know when to wait. He has no reason to justify holding, although such reasons may exist.

After all it is not a bad rule for any farmer to sell his products whenever the prices afford satisfactory profit. When the markets are steady, with general tendencies upward, and he has full understanding of the situation, he may wait without incurring risks, that is to say, he may await his convenience for the delivery—take his own time when it will best fit into the general work. But when prices fluctuate materially, he will do better to "catch on," as the street phrase runs, when the price has suitable margin of profit. That for him is the time, while failure to use it will be very likely to put his products at the bottom.

The influences which govern the markets differ very greatly from those of a few years ago. Now all the principal products of the farm may be delivered in large cities from an extent of country vastly beyond that which forty years ago was the restricted source of supply. Wheat is delivered from Chicago, St. Louis or Milwaukee as quickly as a few years ago it could be delivered from counties adjacent to the cities which are the ultimate markets,and the same is true of all other farm products, including cattle, sheep and swine. In effect the field is multiplied a thousandfold, and therefore competition multiplied a thousandfold. There is so much less chance for individual advantage. On the other hand the means of information are so greatly extended that an intelligent farmer may have better understanding of the market. If he studies conditions with care he will be able always to act intelligently in selling. Market reports made up fairly, not in the interest of buyers, nor of seller, but rather to represent the true condition of affairs, become safe guides to sound judgment, and such reports are accessible to all farmers. The one general rule that should govern in selling and buying is: get full information of all conditions affecting the product offered, then seize upon the opportunity which affords satisfactory profit.

Broom Corn.

The *Western Rural* having had inquiries concerning the cultivation of broom corn and handling the crop, gives the following reply thereto, saying it is a little curious that there is so little said in the agricultural press about a crop that is so important and generally remunerative. It is largely grown in localities, one farmer entering upon its cultivation, and others following suit, until the neighborhood becomes known as a broom-corn producing section. The buyers flock to these sections, and the business usually increases from year to year. In Nebraska, Missouri and Kansas a great deal of broom corn is grown. In Illinois there is not now as much grown as formerly, though the acreage is still large. At the beginning of the present century the cultivation of broom corn was confined almost exclusively to New York and the New England States, but there has since that primitive time been considerable improvement upon the varieties then cultivated. Then the "Shirley," "Pine Tree" and "North River," and some other kinds were the "varieties" cultivated. But there are none of them now in cultivation, at least not in general cultivation. About a quarter of a century ago a variety which grows three or four feet high, and being nearly one half brush, and called the Dwarf, was introduced. But while this variety yields largely it is difficult to harvest, as the brush is partly enclosed by the upper leaf, while the latter varieties grow the brush usually above the last leaf. The Dwarf is cultivated only to a limited extent, and is principally used for making small brooms. The early Mohawk, the Shaker, and Early York are essentially the same, and are extensively cultivated. The brush of the Early Mohawk turns red, but being very bright it is sought after by some of the broom makers. The Tennessee and Missouri Evergreen are probably identical. Yet some think there is a difference between them, and believe that the latter is a coarser corn. On good soil they will grow fifteen feet high, the brush seldom turning red, and they are said to produce a large yield of long fine brush.

The uses of broom corn are principally limited to the making of brooms. For this purpose this corn is the only thing that fully answers; and it is not likely that anything will ever take its place. It is light, tough and elastic, and in these characteristics is not approached by any other material. It can be grown, too, over such a wide range of territory, and is so easily grown, that there seems no possibility of anything else standing any chance to compete with it in the manufacture of the common broom. The seed is valuable, though necessarily it is of secondary importance, good brush being the object of the broom corn grower. Formerly the purchaser was not so exacting as at present, and the corn was allowed to get more fully ripe than it now is, and hence the seed was more valuable. But it is the general rule now to harvest either when the corn is in flower, or at the latest when the seed is but slightly developed, and when thus harvested the increased value of the brush far more than compensates for the loss on the seed. When seed is produced it makes a nutritious food for animals, and some regard it as the equal of oats as feed for sheep; and when ground it is claimed to be an excellent food for pigs or milch cows. But when the crop is harvested, according to the above directions, the seed is worth very little for food, as it contains little but the hulls. Some feed it, however, to cattle and swine, but this is done immediately after it comes from the stripping machines, for it heats in a very short time. Some effort has been made to preserve it. Prof. Miles esteemed it valuable enough to warrant attempts to that end. He dug a pit, put in the seed, covered it with straw and covered the straw with twelve inches of earth. He did this in September and found the seed or rather hulls in good condition in March. But we should want to know more of their feeding value, before we went to this trouble to preserve them. We do not now believe that they are worth the pains. The fodder of broom corn is thought to be about half as valuable as that from Indian corn, but are not aware that this estimate is founded upon any definite knowledge in regard to it. The best way to get rid of the stalks on a field is to burn them, for while in a green state they contain a great deal of saccharine matter, this finally disappears, and the stalk after being harvested becomes dry and pithy. The ashes from the burnt stalk, however, are valuable to the soil. If there are not many of them, throw them in the barn-yard.

As to soil, any soil that will produce a good yield of Indian corn will produce broom corn; and there are some soils which cannot be said to be good corn soils that will produce good broom corn. On the light soils of what is called West New Jersey, broom corn does well, and yet they would not be called first rate corn lands. But as the only general rule that can be laid down, it must be said that such land must be sought for the purpose as will produce a first-class crop of common corn. On our Western prairies, the selection of the soil is not very difficult, and the land is often kept in broom corn from year to year. But as one of our inquirers upon the subject is a resident of the East, it is probable that he had better not adopt this course. As to the practice being questionable anywhere we will not stop here to discuss that matter. Where it is part of a mixed husbandry, it will be found desirable to plant upon a seed bed made by turning under clover or timothy sod. The soil should be thoroughly pulverized before planting, and the land must be kept free from weeds.

In the West we can get along without the use of manure, and some of our Western growers affirm that manuring is useless and worse. The right kind of fertilizing, if the land has long been used for the production of one thing, is valuable. But whatever we may do in the West many Eastern growers will find it necessary to manure, and the question of course is, what with? Well rotted barn yard, hog or sheep manure will prove valuable, and frequently the ammoniacal fertilizers will be required, and the practice among experienced Eastern growers is to apply the fertilizer in the drill or hill. Plaster is very highly advocated for the East. Two hundred and fifty pounds per acre are placed in the drill at the time of planting and two hundred and fifty pounds more are applied after the plants are well up. Ashes at the rate of from twelve to fifteen bushels to the acre are recommended, wherever lime proves useful to broom corn. But the subject of fertilization cannot be intelligently discussed, except with reference to certain localities. Every one must be the judge of the needs of his own land.

Cultivating the Black Walnut.

The demand for Black Walnut timber has so increased of late years, not only for home use, but for export, that the trees are rapidly disappearing. The high price of the wood, which will increase rather than diminish, now allows it to be brought from great distances, and the natural growth is disappearing wherever there are means of transportation. It is not surprising that the attention of many is turned to the cultivation of Black Walnut, and we receive letters from widely separated localities inquiring as to the probable profits of such plantations,and asking for directions to establish them. As to the first point: There can be no doubt that by the time plantings made now afford timber of the proper size, the price will have eached a point which will afford handsome returns. Even at the present price landowners in Great Britain are contemplating making plantations of the trees. Several inquire if the tree will succeed in their locality, and these inquiries come from Mississippi, New York and other States. The Black Walnut is remarkable for its wide range, it being found in Florida, Louisiana and Texas, at the South, all the way to New England and other Northern States, attaining its greatest development in the fertile soils of the valley of the Mississippi. The experience of the few who have made plantations of the tree, shows that in its early growth it needs the protection of other trees or "nurse trees," and that it must have cultivation to prevent the encroachment of grass. The tree does not transplant readily, and like others with a strong tap-root, succeeds better if the seed is planted where the tree is to remain. As with other timber trees, the value of which consists in having a tall clear trunk, this must be planted thickly, to prevent the growth of heavy side branches, and thinned out as the trees become crowded. The land is marked out in rows four feet apart, and the nuts planted eight feet apart in every other row, the intermediate rows being devoted to either potatoes or corn. This cultivation in the alternate rows, is continued for two years, when the spaces between the rows of walnuts are planted with nurse trees. The Silver Maple, the European Larch, and even the White Willow have been used. These are to be thinned out as they are found to encroach

upon the walnut, and are useful for poles, or may be employed as fuel. If any of the walnut trees are disposed to branch low, they should be pruned while small, to secure a tall, clear trunk. When the trees crowd one another, each alternate one must be cut out; though not large enough for lumber, they will serve for various home uses. The seed is planted in spring. It is best preserved during winter, by placing it in heaps of a few bushels, upon a dry spot, and covering with sods, upon which should be placed several inches of earth, as in covering pits of roots.—*American Agriculturist.*

Crude Petroleum as a Wood-Preserver.

J. J. Thomas contributes the following to the N. Y. *Tribune.*

Having employed, the past sixteen years, crude petroleum for rendering perishable wood durable, I give through the Tribune the results of my various experiments. The value of the oil for this purpose appears to be little known among country residents generally. An error into which many have fallen, and which has induced them to reject its use, is in employing it as a paint—mixing it with a pigment and applying it to the outside, with the expectation that it will dry, become hard, and adhere to the exterior like any other paint. In this attempt they have failed, and they have at once pronounced it of no value, and given it up in disgust. As it is long in drying, and always penetrates readily the pores of the wood to which it is applied, the sole object in using it is not to form an outside covering, like common paint, but to render the substance of the wood itself durable.

The light oil will penetrate the pores of pine, and other wood of similar texture, a fourth of an inch sidewise, and an inch lengthwise, from a single application. Wood of white pine exposed fully to the weather, and treated with a wash of petroleum sixteen years ago, remains hard and sound, with about a sixth of an inch of the outside, or so far in as the oil penetrated, brown and compact, while further in the pine has its usual white appearance. The oil with it solid ingredients in solution, entered and filled the pores of the wood, and changed it both in texture and appearance to something like cedar. I used it first on the roof of a dwelling and on the shingles of several barns; and after the lapse of sixteen years, they appear to be as sound as when first laid. Where the roofs are shaded, no moss has formed on them. One of the barns had a steep roof, from which the oil caused the snow, as soon as it accumulated in any quantity, to slide freely from it, and this freedom from heavy loads of snow continued for several years.

The uses to which I have applied crude petroleum have been in preserving the wood of the rough buildings, where exposed to the weather, both shingle roofs and siding, fences, gates, farm tools and machinery, lattice work, rustic structures, etc. The light oil penetrates the wood most freely, and is better adapted to use on tools and all hard-wood articles; and it answers well for pine, and other softer woods, if a fourth or less of the heavy petroleum is mixed with it. A cheap and durable protection is made for dwellings by first washing well the exterior with as much light oil as will readily penetrate the wood, and then giving it one or more casts of some durable and adhesive paint, the best of which, so far as I have tried, is the Averill. This adheres at once to the oiled surface and dries rapidly. It is better, however, to allow the lapse of a few weeks before applying the paint. Common oil paint will not adhere well until the surface of the oiled wood has dried and hardened some months.

Petroleum is particularly valuable for rustic structures. It is not necessary to go to the trouble and expense of procuring cedar or other durable materials for making these structures. Any soft and perishable wood, as basswood or pine, will answer, provided it is thoroughly impregnated with this oil after the work is completed, taking special pains to apply it well at the joints. If a dark color is desired, use the heavy oil. The light oil will give it a lighter shade, and will more freely penetrate the wood. A wooden summer-house, made and oiled fifteen years ago, the lattice work of strips of pine only a half an inch thick, and the whole covered with climbing plants every season, is now sound throughout.

In applying the oil to shingles, the best way is to dip them before they are laid. An oil barrel sawed in two crosswise will make two good tubs for the operation. Fill one of the tubs nearly full with oil, and take a handful of shingles at a time, holding them by the thin ends; immerse all but the small part held in the hand, and place them where they will dry in a few hours, or where the oil will be all fully absorbed, when they are ready for laying. If the roof is already laid, it may be oiled with a coarse whitewash brush, but the work will not be so perfect, as the oil will not run up between the shingles more than an inch. No skill is required in making the application, whether on roofs or on the sides of the buildings, as any laborer who can use a common whitewash brush may do the work, if he will not needlessly allow the oil to drop on the ground, and will take care to cover the whole surface.

Oiling roofs effect the rainwater but slightly, and for a short time only, as the oil soon passes into the wood and none is left on the surface to wash off. If several days of dry weather follow the application, the water is scarcely affected. As the work is made more solid, there is less of a "fuzz" formed by the weather on the surface of the shingles, and less danger of taking fire. The inquiry is often made as to the quantity required for a given surface, or for a thousand shingles. It will vary much with the kind of wood and its condition. As an average, one gallon will go over from 100 to 150 square feet of pine or hemlock, from which the quantity required for any building may be easily calculated. Two or three gallons will be enough for a thousand dipped shingles, and a barrel of forty gallons will cover a roof of 2,000 square feet, the shingles being of pine or other similar wood. Hard wood will not absorb so much and a metal surface will, of course, absorb none, the oil remaining on the surface for months without drying.

The cost of crude petroleum will vary much with the distance from the oil-wells, and with the disposition of the dealers who sell it. I have had no difficulty in procuring what I use from a manufacturer of kerosene in the neigborhood, at $4 to $5 a barrel of forty gallons, but in some of the cities high prices are charged on the claim that it is an irregular trade. It will be seen from the figures that a wooden building, whether of rough or planed boards, may be protected from the weather at a small portion of the expense required for ordinary painting, if the oil can be procured at a moderate price. I have used it for several laborers' cottages, by first soaking the surface well with petroleum, and then applying a good coat of Averill paint. I think that this is much better than three coats of common paint. A repetition of a coat of the Averill paint once in twelve years would be advisable.

The inquiry is often made if kerosene will not answer the place of crude petroleum, but as the solid matters contained in the crude oil have been worked out of the kerosene, it possesses little value; these solid ingredients from the crude oil, remaining in the wood, impart to it the character of cedar. I would recommend in any case the repetition of the oiling once in twelve or fifteen years, the cost being so trifling. The occasional mistake must not be made of supposing that coal-tar will answer the purpose of petroleum. Its effect is exactly opposite. Coal-tar remains on the surface, and if exposed to the weather gradually wears off. On roofs the black color and heat warp and destroy the shingles. But its use underground and in vaults is really valuable. Where petroleum cannot be procured, the shingles of roofs may be rendered nearly as durable by dipping them, before laying, in lime-wash made of fresh sharp lime. A roof treated in this way was found hard and sound thirteen years afterward. The water was "hard" several months after the roof was laid.

Jottings on Various Subjects.

In several back numbers of THE AMERICAN FARMER I have observed various remedies for the disease in cows called *Garget.* Nearly all of these, I think, make it necessary to resort to the drug store. With your permission, I will add to the number one which I have found to be inexpensive, efficacious and readily obtained. It is the root of the common Poke, called also scoke or garget root, (botanically, *Phytolacca decandria*). My mode of administering is to cut a piece of the root about a half finger's length and making a hole of the same size in a potato, turnip or apple, fill it in with the piece of poke root. The animal will readily eat the whole and get speedy relief. Warm fomentations and rubbing with lard will not be amiss.

I find if my asparagus is allowed to go to seed in the bed, the seed scatter and make the bed too thick with plants. Is it injurious to the old plants to cut it when in bloom or before the seed ripens?

Perhaps Mr. Massey or Mr. Watson can answer from experience. Farmers say that cutting sassafras sprouts once or twice a year will increase the growth of root. If this be so, why is it not true of other plants? Last year I cut the tops off my parsnips twice, once in June, and again in August, and the roots when dry were much larger than usual.

Fairlee Grange has at last got into a hall of its own, and may now reasonably expect an increase in numbers and influence.

The Granges generally, I think, are indebted to Bro. Lawrence, of Dayton Grange, for his able and timely paper in the last number of THE AMERICAN FARMER. Let it be read not only in every Grange, but by every farmer.

Fairlee Grange has now pending the following question: what is the best forage plant known to agricultural science, reference being had to its nutritive properties and its effect upon the soil?

To aid in the solution of this question one of the members planted the Chinese Bean; the Soja Bean or the Oleaginous Pea (Soja Hispida); the Teosinte (Reana luxurians), and the branching Doura.

The Soja Bean and the Chinese Bean may be all that is claimed as an article of human food, and they may also answer well enough as a green manure, yet not by any means equal to clover, but as forage plants they are a failure, though very prolific in seed.

The article from the New York *Times* copied into your last issue, page 295, deals, I think, rather summarily with the Teosinte plant, in classing it with "prickly comfrey, pearl millet and a half score of other frauds." It certainly yields a large amount of succulent food, and is greedily eaten by stock. What effect it may have upon the land is not yet apparent. Its roots permeate the soil to a considerable distance, but do not penetrate deep like clover. In this latitude it will bear cutting in July and September and leave a third growth for aftermath or pasturage. It is undoubtedly a perennial, as in this latitude, planted early in April, it has yet shown no sign of making seed. Whether by slight protection it will stand the winter here will be tested.

The sprouting Doura is possibly all that has been claimed for it as a forage plant. From four to ten stalks grow from one seed, and the stalk is full of saccharine matter, and stock eat it readily. It deserves at least further and more careful experiment, as does also the Reana luxurians. The vast crops of the cereals grown in the West must make the same crops in the East continually less remunerative, and our farmers will be compelled to resort to dairy products, in which Western competition is yet insignificant. For this purpose the best and most productive fodder plant is the desideratum.

HOWARD MEEKS.

Kent County, Md.

Live Stock.

The Sire is Half the Herd.

The importance of using only full-bloods as sires is often insisted on by writers on the subject of breeding. The following diagram may assist parties of less experience to a better understanding of a matter and enable them to see at a glance the results to be expected:

½ blood. { Full-blood
¾ blood { Full-blood
⅞ blood { Full-blood
Scrub

On the right we have the pair with which we are supposed to begin breeding, viz: a full-blood male and a scrub female.

To the left of these we have their produce, that is, a half-blood female, which we breed to another full-blood male, the result being a ¾-blood female. This in turn bred to a full-blood male gives us, on the left, a ⅞-blood female. She, if bred to a full-blood male, would give a 15-16, and by continuing the same course we would next have a 31-32. Granting that the influence of the sire and dam are equal, and that half the blood of each is represented in the progeny, it is evident that a sire will give half the character to the produce of the herd in which he is alone used. Practically, however, the influence of well-bred sires usually predominates over that of grade dams, so that, in fact, the improvement is generally greater than would be inferred from the figures here given.

Breeding in the manner shown might be continued indefinitely until no trace of the scrub stock could be detected. Suppose farmers and breeders everywhere should use only full-blood sires, what a rapid advance would be made in the improvement of our domestic animals. But farmers do not all do this, and perhaps they never will. On the contrary they persist in using half-bloods and high-grades as sires.

It often happens that a few crosses only, with full-blood sires on scrub stock, will result in grade progeny which, to all appearance, are as good and pure-bred as those of very many more crosses. When put to the test, however, as breeders, they almost invariably show their own low origin in their progeny. The trace of scrub stock which could in no other way be detected, is generally revealed by the inferior stock produced.

The following diagram shows the usual result of the common method of using half-blood sires:

Scrub!! { ½-blood { Full-blood
Scrub { Scrub

First, the farmer buys a full-blood male which he breeds to a scrub female. He selects from their progeny a male, which is, of course, a half-blood, and this he breeds to another scrub female. He gets, as the result, something more like scrub stock than any improvement he had expected, so that, instead of having made any progress, he finds himself back at his starting point. All he has made by the purchase of a full-blood

male is, that in the first cross he got some extra fine breeding animals. His mistake was in selecting a male from these for breeding purposes. Had he retained one or more of the best females and bred them to a new full-blood male, he would have been on the advance, as shown by the first diagram.

So long as farmers persist in using half-bloods and grades as sires, so long will they be pulling down almost as fast as professional and amateur breeders can build up.—*Swine Breeders' Manual.*

Farm Teams.

It would naturally be supposed, from the farmer's effort to avoid expenditure, that he would carefully study the cost of everything he does. But this view would be hastily abandoned on examining his plan of conducting a farm team. What would be thought of the wisdom of a man in a village or city who kept teams for work and only employed them, at most, half of the time? He would soon find out that his teams ran him in debt, or left the balance on the wrong side. Yet he gets a price for a day's work that farmers would think quite beyond their profits to pay. But if it is true that the farmer cannot afford ordinary prices for team work, can he, then, afford to let his own team lie idle half of the time?

Whether he can afford it or not, more than one-half of the farmers in this country do not work their teams, on an average, more than one-half of the time. How many farmers, with all their ability for saving expenses, have ever carefully considered this large waste of team capacity for work? Should they carefully count the cost of keeping their horses supposed to be devoted to farm work, they would find that for every full day's labor performed the cost had been fully $4 per day. If a miller, a lumberman, a provider of material of any kind requiring the service of teams, cannot afford to keep idle horses in the stable, how can the farmer afford it? The farmer often complains, and rightfully, that his margin of profit is very small, that other branches of industry make larger profits; and admitting this conclusion, would it not be well for farmers to study the methods of economy in time adopted in other branches of business? A team horse will soon eat his head off if kept unemployed, and he will do so whether kept by the farmer or the manufacturer.

Some farmers suppose their teams will wear longer, will remain sound and healthy to greater age, if permitted to be idle a large part of the time. But even this is a mistake, when it refers to a considerable period of idleness. Farm teams that remain unemployed a large part of the winter, are much less capable of doing full work in the spring than they would be had they been kept at steady, reasonable service. Were horses to be worked half of each day, resting the other half, this conclusion would have some foundation, but it is a common fact that farm horses, working in periods, break down early. Steady, reasonable work, with judicious feeding, is most favorable to a long usefulness.

Another point made sometimes in favor of this idleness, is, that the team can be wintered without grain. It is true that a horse will eat less without work—the saving in food is about one-fourth—but the question arises, whether the labor is not worth much more than one-fourth of the keep. This idleness of farm teams is a very serious matter upon small farms, where the food of the team represents so large a fraction of the production. These very farms would pay a better profit if they had the benefit of the full work of the team. There is not too much team work provided on farms, but too little work for the teams that are kept. Better cultivation is what most farms need, and more, instead of less team work is needed. There is probably nothing that more needs reforming in farm practice than its imperfect cultivation of the soil, and a better use of the time of the farm teams will do much to improve it.—*National Live Stock Journal.*

Water for Cows in Winter.

Very few farmers make sufficient preparation for water for stock in winter, and many, indeed, fail to do so in the summer. When cattle have the run of large lots in which grass is growing and green, they do not suffer so much from thirst if they do not happen have access to water when they please, as they do in winter, when living on dry feed. The succulence of the grass supplies, in part, the necessity for water, but, when living on dry food, everything goes wrong if water cannot be had when wanted. Water is essential to animal life. The blood is three-quarters water, and it enters into every organ and tissue of the body. It is the vehicle for the equal distribution of nutriment and heat to all parts of the body and for carrying off waste and foreign matters which may happen to be taken in; and when it is insufficient for these purposes, the comfort and health of the animal are at once affected. Assimilation is impaired or ceases wholly and waste increases, young animals stop growing, fattening stock cease to increase in weight, and cows shrink in their milk, and it becomes deteriorated in quality. It cannot be long wanting without causing an actual loss of fat and flesh. A lack of water is more detrimental than a lack of food, and creates more discomfort, and will terminate life sooner than hunger.

No conveniences about a farm pay better than a convenient water supply. Cows, in particular, should have access to it at all times, especially if they are obliged to live, as most cows do, chiefly on hay, as it creates a stronger demand for water than other kinds of fodder, such as straw, corn fodder, or millet. Some people seem to think if cows get water once a day it is all they need; but that is not enough, unless they are living on succulent food, such as roots or ensilage. Cattle are their own best judges of their need of water, and they do best when they have their option about using it. When they drink but once a day, they overload with it to their injury. Taking in an oversupply of cold water chills the stomach and occasions discomfort and pain, and what is worse, stops digestion till the contents of the stomach, by slow degrees, warm up again. This occasions a loss of time in the functions of the stomach and disturbs the condition of the whole system. Ice-cold water is always objectionable, even when stock have admission to it *ad libitum*. It impedes digestion, and is not relished so well as when taken at a more elevated temperature.

Wherever water can be obtained from an elevation sufficient to carry it into the stable, it is the most convenient, and will pay best, to water in the stable by passing it in a trough under the manger, the bottom of the manger serving as a cover to the trough, to which it is attached with hinges, so that it can be turned up when desired, to give the stock access to the water. When thus watered, all the animals are served alike and without disturbance, and by having water when they want it, without having to wait for it, they will not take excessive draughts, as they are apt to when kept away from it by the masters of the herd after they have become thirsty, or as they are very sure to when drinking but once a day. On account of its more elevated temperature, spring water is preferable to brook water, and where springs are not available, cisterns set in the ground so as to temper their contents to that of the earth, make an excellent substitute for springs. It is a good time now, before cold weather sets in, to consider the matter of the winter's water supply, and to make it as good and as convenient as possible.—*Nat. Live-Stock Journal.*

At the Onondaga Co., N. Y., Fair, the prize for the best 20 lb. package of butter from a private dairy was awarded to the sample of Smith and Powell, made from Holstein cows, in competition with several Jersey dairies.

Thoroughbred Sheep.

Is it proper to apply the term thoroughbred to sheep? asks a correspondent. Yes, we reply, but had better offer an explanation. This subject of the proper application of the term thoroughbred bobs up in agricultural and stock journals periodically, and like the cheat and hollow-horn questions bids fair never to be thoroughly understood. It must be stated that thoroughbred was originally only applicable to the English running horse. But it makes no sort of difference with us what the origin of the term was, or what meaning it was intended to convey. We have come to use it to designate all pure blood animals, and that is all there is to it. Of English origin and special meaning, we have Americanized it, and extended its meaning, just as we have done with many other words, and precisely as we had the right to do; and if we should write a page upon the subject we could not make it plainer than we have here. Now a sheep is thoroughbred when it is of pure blood—that is, when it comes from a family or breed that transmits with reasonable precision, its own characteristics. Blood means the possession of power to transmit in breeding certain points, and pure blood signifies that there is no admixture of the blood of other breeds. The principles of pure or thorough breeding is that like produces like, or, in other words, that the offspring of a Merino ewe and ram will have the distinguishing points of the Merino breed. As a rule, it may be said that the lamb will partake of the characteristics of the ewe and ram, in thorough breeding, but this is not always the case. It may be quite unlike either, but have a strong, or almost exact likeness of some one of their ancestors. This is what is termed breeding back; and while it is always desirable to select breeders that we would like to have the offspring resemble, the novice in sheep-breeding must remember, that the only certainty he can count upon is to get a good representation of the breed that he has selected. The ability to accomplish this we are all familiar with from experience and observation, but just how nature accomplishes it we do not know and probably never will.

It is not so uncommon as to be at all marvelous to find unusual characteristics cropping out in sheep or other animals. The young breeder who has followed the general run of teachings upon stock breeding, that like produces like, might be astonished at this. Desiring the very best, he may have been induced to pay large prices for his ram and ewe, and when the lamb comes, lo! it is not precisely what he expected. It is a good Merino, if he is breeding Merinos, or a good Cotswold if he is breeding such. But it is not as good as the parents. It presents, perhaps, points of marked difference. Now generally, if he could follow the ancestors of the ewe or ram back, he would find the animal or animals from which his lamb inherited its seeming peculiarity. But usual characteristics are not always hereditary. Sometimes they are purely accidental as we use that term, and in such cases they are what we call freaks of nature, and cannot be explained.

The tendency to breed back should be a warning to every breeder of sheep or other animals. With the inexperienced breeder it always is, but the inexperienced not unfrequently get the idea that a breed is something that is unalterably fixed. He does not take into consideration that the breed has been made by rigid selection and weeding out, and that to maintain its excellence this same rigid selection and sorting must continue. There is scarcely anything much easier than running down a breed. It has cost a great deal of thought and a great deal of perseverance to create the Merino or any other breed of sheep. None of them have developed by chance. The Spanish Merino was the product of the most intelligent care in breeding that was possible at the time of its creation. Under Yankee ingenuity and restless effort it was still further improved, and now we have the American Merino which is substantially a breed of itself. This product, the result of close study and carefulness, is yet watched and guarded with all the old time care, to say the least, in order that it may be kept up to standard. The sheep of our best breeders are thoroughbred in reality as well as in name, because they make an effort to keep them so. But let a man purchase the best flock of Merinos, Cotswolds, Southdowns or Shropshires, and turn them loose to take care of themselves and to breed promiscuously, and he cannot keep up the standard of his breed; and if he continues that sort of management long enough he will have about as shabby a flock as eye ever rested upon.—*Western Rural.*

How to Build Up a Flock.

A Michigan correspondent of the *National Live Stock Journal* says: "Four years ago, I bought thirty ewes—grade Merinos—culls from a flock, for which I paid three dollars each—a pretty steep price, I thought—but they were round, heavy bodied, and short-legged. The first season they sheared on an average, a little over five pounds of wool, and I raised twenty-eight lambs. Could not buy such a ram as I wanted, so I gave five dollars for his service. Have done the same twice, because I could not buy such as I wanted. Have lost but nine sheep in the time (four years); have sold forty-six for $211, including culls, and have at present a flock of seventy-one. Sold my wool the 29th of June, which averaged nine and three-fourths pounds per head, washed. I use none but thoroughbred rams. Have just bought one which sheared twenty-seven pounds. Am not given to boasting, but my sheep are the wonder of the neighborhood, and my success something they cannot understand. I have but one motto—Eternal vigilance is the price of success. I was offered early this spring for all my lambs (coming one year old), $7 apiece."

Glanders in Horses.

Every horse owner is more or less acquainted with that loathsome disease, the glanders, and every one should be aware that it is both contagious and fatal, not only to horses, but also to mankind. The fact that the disease to this day baffles all treatment is sufficient reason why the detection of glanders in a stable is always looked upon as serious. If the disease always assumes the same characters, if every glandered horse presented the three special symptoms essentially belonging to it, viz.: the greenish, sticky, and at times bloody discharges at the nose, the hard, painless and adherent swollen glands at the jaws, and, above all, the peculiar and characteristics ulcerations of the mucous membrane upon the cartilage of the cavities of the nose, there would be no difficulty in recognizing the disease, and condemning the animal thus affected as most dangerous. But this is not always the case. This disease assumes many forms. Sometimes only a slight glandular enlargement, again discharges from the nostrils, while in a third animal neither of these will exist, and only small ulcers will be detected in the upper angle of the nostrils. Still the animal is just as dangerous as if it showed all the symptoms fully developed; in fact, even more dangerous, for while in this condition, it may apparently be in perfect health, its skin presenting nothing unusual to the ordinary observer. The horse may remain in good condition, feel as well as ever, be able to do its work, and remain thus for months, and communi-

cate the glanders to many animals who may come in contact with it. It is necessary to detect the disease at the start, and for this no one should be better qualified than the regular Veterinarian—he who has, by his studies, become familiar with the different aspects of the disease. If once detected, there must be no hesitation; certainty of the existence of the disease should mean death to the animal affected. Unless it is killed, most serious, even fatal, consequences may follow.

The duty of an owner of an animal in a suspicious condition is to have it examined at once. If there is no doubt about the disease, the horse must be at once destroyed. If there is doubt, it should be isolated, and rather than wait for the development of all the symptoms, which may take a long time, inoculation of the matter from the discharge can be made on an old horse, a dog, or a rabbit, but still better on an old mule or donkey. This inoculation will produce glanders, no matter how small the quantity of the virus, if taken from a glandered horse. —*Prof. Liautard, in American Agriculturist*

Pig Pens.

My experience last winter taught me a valuable lesson in regard to confining young pigs on a plank floor. Several got so stiff that it impaired their growth. In this cold latitude it is quite difficult to keep pigs warm in winter without confining them in a pen. I have an idea of building a sort of an annex pig house with a gravelled floor and a platform in one corner with low sides to keep the bedding on it for a sleeping place, and so give the pigs a chance to exercise on the ground. Of course this ground floor must be elevated above the surface of the earth outside, or else the water will soak in and make it wet and muddy. A foundation could be put under it of small stones and the gravel to be put on top of this. The pigs would have to be kept rung, or they would root it up. In such a pen I do not believe pigs would get stiff and lame, as they are apt to when confined a long while on a plank floor. It should be made roomy enough so that there would be ample space. Where a few pigs are to be kept, a smaller pen would answer, of the size of a length of a board—13 feet square. Such a pen should be lined on the inside and filled in with chaff or saw dust to keep it warm, and the space overhead left open to the roof, which would be ample for good ventilation.—*Cor. New York Tribune.*

Abortion in Cattle.

The *Breeders' Gazette* says on this subject: Abortion in cattle is due to a great variety of causes, among which some appear to be very obscure, or at least have not been very satisfactorily explained. Among the causes known to produce abortion in cows, as well as other domestic animals, may be mentioned mechanical or external injuries, overdriving, undue excitement from various causes, being much worried by dogs, jumping ditches, crowding through narrow doors or gateways, hard and uneven stall floor, too short stall floor, overfeeding and want of exercise, innutritious or badly prepared food, stagnant or impure water, ice-water, rusty and musty hay, and especially ergot, which is frequently found developed in variety of grasses, as well as in the cereals, rye and corn. This product of vegetable disease, on account of its being usually met with in rye, has been given the name of spurred rye. It possesses the property of exerting a special influence upon the womb, causing contraction of that organ and consequent expulsion of the fœtus, if taken of in sufficient quantity. Occasionally, from some unexplained cause, abortion will assume an epidemic character, affecting whole herds, and even the herds on a large extent of country. In ascertaining the cause of continued cases of abortion, occurring on a farm or in a locality, much caution will be requisite. The nature of the food and water should be carefully looked into, and if the cows are at grass, the herbage should be searched for any deleterious or poisonous plants, or poisonous product—the development of ergot being especially favored during some peculiar seasons. It is also understood that cows which are fed in the neighborhood of and in woods, and that live on coarse and rank pasture in autumn, are very liable to this complaint, and especially if they have aborted before. The odor proceeding from a cow that has aborted has been assigned as a cause of abortion in other cows, by bringing on either a state of nausea or a kind of nervous excitement. This, however true in certain cases, is not an invariable rule, as it sometimes occurs in animals wholly apart from the rest of the herd, but occurring simultaneously with other cases on the same farm. In order to prevent abortion, or to effectually stop its progress where it already exists, the cause or causes of the same must first be ascertained, for, so long as these remain in operation, no remedy will be likely to succeed. If the cause lies in the food, an entire change of diet; or, if abortion occurs when the animals are on pasture, their removal from that pasture or locality to different pasture and different soil, if possible, will often be found a sufficient and the only effective remedy. A cow that has once aborted is apt to abort again during the period of her next gestation. Therefore, any irregularity in feeding and management should be carefully guarded against; and, when stabled, such a cow should be kept quietly in a stall by herself, preferably in a box-stall. A cow that has once aborted, may abort again, simply by standing near by another cow that is calving. Such a cow should not be kept in too high condition while in calf again. Avoid too succulent, watery, or laxative food; at the same time she should not be fed exclusively on dry or very bulky food, that might produce costiveness. It will always be proper to immediately remove an aborting cow from the rest of the herd, and to thoroughly disinfect her stall without delay. Among preventive measures, we may mention that the feeding of hemp seeds, a half-pint to a pint a day, during a month previous to and a month after the time corresponding to her advancement in gestation at her last abortion, is supposed to have been, to some extent, successful against recurring abortion. It is also regarded as a safeguard, or at least a precautionary measure against future abortion, to let the cow that has aborted not be served by the bull during one year thereafter. In regard to whether the transfer of a part of your herd to a neighbor's farm for wintering would be likely to cause abortion among his cows, such would not be likely to occur if the transfer consisted of yearlings and steers, or cows that have never aborted.

Diseases of Sheep.

The sheep is a ruminating animal, and, in common with all cud-chewers, has a very complex digestive system; and while its four stomachs do not hasten, but rather prolong the work of digestion, yet that work is more perfectly done in the sheep than in any of our domestic animals. But on account of the complexity of its digestive organs, it is liable to diseases affecting this system. The brain and nervous system of the sheep are smaller in proportion to its size, than those of any other animal. On this account they are not capable of great or long continued muscular exertion; the circulatory system is also small and comparatively feeble. On account of these peculiarities sheep are not very subject to inflammatory diseases; but the power to resist disease or to recover from it when attacked is diminished from these same causes. Indeed a serious attack of diseases in sheep too often proves fatal, and especially if it be a disease that makes a drain on the fluids or in any way depletes the power of the system. This fact must be remembered in the treatment of their diseases. Bleeding or active purging should not be resorted to except in active inflammation, and then cautiously. In the treatment of diseased sheep, all medicine should be given in a liquid form through a drenching horn, or properly shaped funnel. If given concealed in food it passes into the first stomach, or pouch, where it is liable to be lost.

The chief disease of the breathing organs are catarrh or cold, and pneumonia or inflammation of the lungs. Catarrh is known by profuse running at the nose, often accompanied by a cough. It is a disease of winter and spring months, and is generally the result of too close and too warm stabling. Sheep need dry bedding and protection from rain, but their health demands a free exposure to the open air. Catarrh is a troublesome but not dangerous disease, unless the inflammation extends to the lungs when it becomes pneumonia, which is generally fatal. This transition is marked by a quick and labored breathing, a frequent hacking cough and a grinding of the teeth together. The discharge from the nostrils becomes yellow; a high fever, loss of appetite and thirst are present. Bleeding and purging with epsom salts is recommended, but usually death terminates the case in a day or two under any treatment. This disease is often the result of exposure to cold rains after shearing.

The special diseases of the digestive system are diarrhœa and costiveness. Diarrhœa, or scours, as it is commonly called, occurs generally in the spring when the diet is changed from dry winter food to the tender spring grass. This disease is not generally accompanied with the loss of appetite, nor with fever, and therefore is seldom fatal. The sheep affected with diarrhœa should be separated from the flock and kept in a lot with but little grass on it, and fed with dry feed until the condition of the bowels is corrected. If the disease is stubborn, give an ounce or two of castor oil, and follow it by two tablespoonsful of strong oak bark tea with a half a teaspoonful of prepared chalk or baking soda in it, morning and evening. Costiveness often occurs when sheep are changed from green pastures to dry food. The animal frequently stretches itself and makes a groaning noise when voiding dung. A little linseed meal mixed with the food will generally remove this difficulty. A mixture of sulphur and salt, placed where sheep can get at it, is a good precaution against disturbance of the bowels in this direction.

In the early years of the settlement of Indiana, the sheep died in great numbers from an animal of the leech family, known by the common name of fluke, imbedding itself in the liver and multiplying till that organ is literally destroyed. The eggs, or larvæ of these parasites, are taken in with impure pond water when the sheep drink. In a healthy sheep the covers of the eyeball is bright red, but when affected with the flukes the eyes become pale, and finally a dirty yellow. The sheep is rapidly reduced in flesh and in a few weeks dies, apparently from emaciation. A free use of sulphur is the only remedy proposed, and it only succeeds in the early stages of the disease. Since we have drained our swamps and given our sheep good water to drink the fluke is rapidly disappearing.—*Cor. Iowa Homestead.*

MR. T. S. COOPER offered Mr. Fuller, of Canada, according to the *Breeders' Gazette*, the enormous sum of $30,000 for the famous Jersey cow Mary Anne of St. Lambert, with the intention of breeding her to Pedro, but the tempting offer was declined.

Purchase of Horses.

Messrs. Editors American Farmer:

I have just returned from Chicago where I purchased from Mr. Joseph D. Becket one imported Norman stallion, Crown Prince, 3 years old, weighing 1,850 pounds, quite a promising colt. Also four seven-eighths Norman mares, weighing from 1,600 to 1,800 pounds, in foal to an imported horse. I find good draft horses are extremely scarce through the West and very high, and it cannot be many years before we will find good horses high in Maryland. I have now two Norman stallions, and it will not be long before Montgomery will improve her horses.

Respectfully yours,

Montgomery Co., Md. J. B. DIAMOND.

[WE had the pleasure of seeing these fine horses at the Montgomery County Fair. That county is to be congratulated on this addition to its stock in this line and on the public spirit of Mr. Diamond.—EDS.]

The Dairy.

Beef and Butter Pound for Pound.

When we were told, some years ago by a breeder of Jersey cows, that he could make a pound of butter as cheaply as the best of feeders could make a pound of beef, we confess to have received the statement with some grains of hesitation, and the more we thought of it, the more incredulous we became; but it was made by an experienced and a truthful man, and we were anxious to see it in that light if it was true, and to prove the contrary to him if not. We therefore sought information elsewhere, and the further we looked and the more we investigated, the more clearly did we realize the correctness of his point. But what astounded us was the fact that his butter was being sold by contract, the year round, at an average of thirty-five cents a pound, whilst the best beef was worth from six to seven, and that farmers were devoting so much of their time and their means to the production of the cheaper instead of the higher-priced article. And even now, we question if the problem is a clear one to the majority of farmers, or even of business men who are notoriously close at calculating all the little details that enter into the cost of an article, and comparing the result with the price they can get for it. Let us do a little figuring, to show how it can be done.

From the report from the last fat stock show, we learn that the heaviest animal weighed 3,055 pounds; the heaviest two-year old steer, 2,220 pounds; and the prize yearling 1,000 pounds. The champion four year old steer, McMullen, weighed 2,565 pounds and had made a gain, during the year, of 470 pounds; 535 pounds was the heaviest gain made in the year by any animal shown last year, while several made not over 300 pounds. Four yearlings made daily gains of 2.97, 2.51, 2.31, and 2.23 pounds. Young stock always make larger gains on the food consumed than older ones. These results were obtained upon beef stock—Herefords, Shorthorns, and their grades and crosses—with the best feed and care that experienced feeders could give them, and may be considered representative animals of their class.

Let us now look at the record of some of the best butter producers and compare the probable profit of the two classes. Eurotas, the property of A. B. Darling, has a record of having made 778 pounds of butter from 7,525 pounds of milk, in eleven months and six days; Jersey Queen of Barnet, 770 pounds in one year; Jersey Belle of Scituate, 705 pounds in one year; Pansy 574 pounds when a four-year-old. Mr. A. B. Darling's four-year-old cow Bomba made twenty one pounds and 11¼ ounces in seven days, or 3.108 pounds per day. These are representative cows, and are only cited to show the capabilities of the cow for butter. Good butter cows will

produce nearly as many pounds of butter upon the same amount of proper food as can be obtained pounds of beef when fed to the average beef stock.

It would take a pretty good beef animal to produce that number of pounds, live weight, in the same time. Yet we can sell our butter for four or five times the price of live-weight beef. If she gives but 300 pounds during the year, and we sell it, as he did, for thirty-five cents, we have $105; 300 pounds gain of beef, at six cents, would be $18.

It may be said that dairying is more expensive than steer feeding, and the latter can be conducted on the cheaper lands of the West; but, as against such considerations, we have others to offset them. Our product is more easily handled, costs us much less to ship, the cows give us a calf every year, and we have their milk for the pigs.—*Rural World.*

THE Holstein cow, Echo, owned by Fred. C. Stevens, Attica, N. Y., recently completed her year's milk record, which foots up 18,120¼ pounds, which is 115 pounds more than the famous cow Aggie, which has heretofore, in this respect, led all the bovines of the world. Echo is ten years old and weighs 1,610 pounds, consequently she has given over ten times her weight in milk, during the year. The yield in one day was eighty-five pounds; in one month, 4,196 pounds.

Poultry Yard.

Artificial Incubation.

Messrs. Editors American Farmer:

The high prices which early chickens bring is caused by the difficulty experienced in getting the natural mother to incubate in winter time, which season is unnatural for most feathered species to set and raise their young. To overcome this difficulty in order to supply the increasing demand for early broilers attracted the attention of inventive genius, who brought into existence the incubator, though not perfect. The strongest advocates of the old-fashioned natural way of doing things, admit that they can be hatched in a wooden mother by heat from a coal oil lamp. It must be a source of consolation to lovers of spring chickens to feel that the days of sixty cents per pound for them are numbered, and that they like ice and flowers can be produced out of their natural season. Artificial incubation was first practiced in India and Egypt, where the eggs were placed in large ovens, but never occupied much attention until 1851 when Cantelo exhibited a hydro-incubator in London, and induced the French to experiment with them, which resulted satisfactorily. In our country the subject claimed the attention of Corbit, Wright, Halsted, and others, who have met with much success. In order to succeed in hatching eggs artificially it is necessary to observe certain natural conditions, such as regular temperature from 100° to 106° Fahr. applied at the upper surface of the eggs, moisture, and after the sixth day, adequate ventilation. The source of heat is immaterial so long as these essentials are observed, however hot-water or hydro-incubating and heat from a lamp have proved the best. Place the incubator in an out-house on the ground floor, where the temperature is even, good ventilation and no jar, provide fresh clean eggs, have the temperature 90 degrees, then carefully place the eggs in the trays; gradually raise the temperature to 106; but in no case higher. There is danger in overheating; place beneath the egg tray moist sponge or pans of water to obtain moisture. The day before the eggs are to hatch sprinkle with an atomizer, and turn the eggs half over every twenty-four hours; after the first week they should be aired daily and cooled down to 90; examine on the fifth day with an egg tester and reject those which do not show embryos and distinct veining; they will do for cooking. After the sixteenth day be sure to remove all offensive odors, such as coal oil, asphalt and decaying matter of any kind; the chickens will then begin to breathe through the pores of the shell and are easily killed at this stage. If you fail in the first attempt do not be discouraged; after you have had some experience be satisfied with sixty per cent.; if your expectations run as high as ninety per cent. you will be disappointed. The hen will not do that well; we cannot equal her. There are many small farmers, who practice mixed husbandry, who would find the raising of early chickens a profitable adjunct, especially if they have idle time in winter, as many do. Many men think the poultry interest too insignificant to claim their attention, but if it received the attention in our country that it does in France it would equal any other product; but as our country becomes more thickly populated we will find it of great importance to pay more attention to minor industries. W. E. MANAKEE.

Montgomery County, Md.

How to get Eggs in Winter.

The farmer who leaves his poultry to roost in the apple tree at the corner of the barn, and to pick up their living at the pigs' trough and in the barnyard, may occasionally get an egg in winter. But as a matter of fact there is on most farms a great dearth of eggs from November to March. With a warm shelter and suitable feed, pullets that begin to lay in the fall and will continue to lay through the winter. It is mainly a question of feed. The staple feed is Indian corn, especially in the West, because it is most plentiful and the most convenient. It furnishes plenty of fat and keeps up the heat of the fowls, but is poor in albumen and the phosphates. They want a variety of grains and vegetables. Most farmers have milk, and if this can be added it will be all they need. Butchers' scrap-cake is good, and may safely be kept in the poultry yard where the fowls can help themselves at pleasure. Boiled potatoes or turnips, mashed and mixed with Indian meal, make an excellent feed for laying hens. Fowls are particularly fond of cabbages and turnips at all stages of their growth, and eat them raw greedily every day if they can get them. We have found so good results from feeding cabbages to laying hens that we always lay in a large supply for the winter. Refuse from the butcher's and offal from the fish market also furnish good material for making eggs. These are accessible to most villages and can be had at a small cost. A hen is only a machine for producing eggs. If you want the finished product you must put the raw material into the hopper. It should not be forgotten that there is a liberal grinding going on in the gizzard, and the laying bird should have free access to gravel, with sharp grit, broken oyster and clam shells, which assist in reducing the grain and form egg shell. With a plentiful supply of egg-producing food, hens will lay well in winter, when eggs bring the highest price.—*Col. Farmer.*

Winter Treatment of Poultry.

A correspondent, in addressing us on this subject, says in brief, that each fowl ought to produce one hundred and sixty eggs a year; that in winter warmth is indispensible; that the fowl must have some of the food they find at other seasons when at large; that they must have plenty of room in their house, and it and the laying boxes kept clean; that they must be fed with corn, barley, oats and have a box of sand, oyster or clam shells pounded up, or old mortar, or bones, dried and pounded fine; that mashed boiled potatoes and corn-meal are excellent; that fatty matter of any kind, fresh beef, or pork scraps, etc., must form a portion of their diet; that hens are fond of vegetable matter during winter and will eat cabbage, etc; and that they must be kept pure from vermin, which nearly always follows entire cleanliness. In case, however, vermin should still make their appearance, there is nothing so defective in removing them as rubbing the top of the head, under the wings and upon the back, with lard. These suggestions we have made time and again; and have only to add now, that all who desire complete success, and of course satisfactory profit from poultry-raising, must adopt them.—*Michigan Farmer.*

Chickens for the Market.

Many farmers have an idea that a chicken must have a large field to roam over to do well, but this is a mistake if it is desired to fat them for market. If they are to be kept to furnish eggs when old enough, if permitted to run at large they will do quite as well, or perhaps better, than if confined to a small enclosure, because it is not desirable to have a laying hen very fat; but for market a young fowl is rarely if ever too fat.

By confining a flock of chickens to a small enclosure they do not have an opportunity to run off their fat as when permitted to go as far as they please. They soon get accustomed to their small enclosure, and will remain quiet after eating, so what they eat is not wasted by constant exercise. It is true if chickens are to be confined to a small yard they should be faithfully attended to and given all they want or they will not get as fat as when they run at large. They need a great variety of food, given in such quantities as will keep their appetites good. The secret of success in feeding any animal is in giving them just enough to supply their wants, and yet not enough to clog their appetite. While corn may be the principal food, because the cheapest, oats, barley and shorts should be fed freely, the latter in connection with boiled potatoes or other vegetables. A small ration of meat should be given each day, and also some green vegetables, such as cabbages, grass or turnip leaves. During the last two weeks before killing they should receive about all they will eat of corn and corn meal.

While it is important to know just how to feed to the best advantage, it is quite as important to know how best to prepare the chickens for market, and have them look well. More than half the chickens that are sent to market are sold from one to two cents a pound less because they have been improperly dressed. Many to save time dip them into boiling water, and thus greatly injure the looks of the flesh by blistering it. Those who best understand how to dress a chicken manage to get the feathers off in a very short time after the fowl is killed. By so doing they do it much easier than if not done until the fowl begins to cool.—*Mass. Ploughman.*

Horticulture.

Peach Trees and Peach Orchards.

The demand for peach trees has been greater this season than for ten years past. From every section of Maryland and Virginia that had a crop of peaches this year come inquiries about trees; the over supply of peaches in the principal markets, a few years ago, has been shorn of its influence upon planters, by the good prices obtained through nearly all of the peach season the present year; then, to add still greater impetus to the "rage" for peach orchards, the evaporating of the fruit seems to be about all that is now needed. Evaporators of many designs, are being erected in encourging numbers wherever there is sufficient of the fruit grown to offer any inducement, and indeed it does look as though there was good opportunity presenting itself to make peach growing profitable upon a basis less uncertain and spasmodic than heretofore. When the main dependence for the consumption of a crop of peaches rested on the canning houses in the cities, it was no very difficult thing for the proprietors of those establishments to perfect arrangements by which the grower's profits became insignificant, even invisible. "Time rights all wrongs," is a maxim the truthfulness of which is affirmed apparently by the progress in peach growing; now instead of the canning houses all being confined to the cities, they are being established where the fruit is produced, and while this move is attended with its share of difficulties, in some respects at least, it has advantages that outweigh them. Again, the area in peach orchards was considerably reduced by the hard winter of 1881, a fact not lost sight of by many who see profits in prospective orchards. The above are the strongest and plainest arguments in favor of extensive planting. It is to be hoped there is no deception in the fascination they hold. The growing of peaches has progressed far enough to possess most of planters with a solid faith in old and standard varieties; the inclination to experiment with new and untried kinds, is less conspicuous now than for several years; to find them so different from what they expected and hoped, is no longer popular; it is not now fashionable, as an old gentleman of teutonic extraction expressed himself in regard to the "Hartford Prolific Grape" a short time back. Troth, Crawford's Early and Late, Reeve's Favorite, Old Mixon Free, Beer's Smock and Salway, are in nearly every selection: the *quite earlies* are "too uncertain," say the majority of planters, and then too, they won't answer for either drying or canning, which is a forcible argument against growing them in large supply. Heath Cling, once very popular, is no longer so, "just enough to have some to preserve and can for home use," is all that is now wanted in orchards of from 500 to 5,000 trees; Hale's Early seems to have lost all favor with planters. 'It rots so badly" say all, while Flater's St. John, seems to be making friends among growers, because of its color for one reason, as yellow fruit is the more "fashionable."

Judging from this fall's planting, there certainly must be *great* increase over the country where peaches are most extensively planted, in the facilities for disposing of the fruit promptly and rapidly, when there is a crop, otherwise there will certainly be a repetition of over supply, within the next half dozen years. Six times as many evaporators as are now erected, will find plenty of material to work on when a general crop occurs, and in the evaporation industry rests the strongest hope of the market.

It is a fact in favor of Virginians planting, that the peach centre, as it is commonly termed, is rapidly moving southward. The history of peach growing in this country, demonstrates that it cannot be profitably perpetuated in the same section; it wears out somewhere and somehow; disease works its way among the orchards sooner or later, and those who devoted their lands to peach orchards, again fall back on wheat and corn.

Denton, Md. JOHN W. KENN.

PRIZE CROPS OF CORN.—Messrs. Hugett & Schindel of Washington county, Maryland, offered prizes to the amount of $100 to boys in Washington county who would raise the most corn on one-fourth of an acre of ground. The committees to measure the ground and weigh the corn have reported to the directors of the Agricultural Association and the prizes awarded as follows: Joseph W. Harp, first prize, $50; John W. Witmer, second prize, $25; Daniel F. Snyder, third prize, $15; Wm. P. Sinison, fourth prize, $10. Estimating a bushel of corn at 72 pounds, Harp's yield was at the rate of 190.4 bushels per acre, Witmer's 155.8, Snyder's 146.4, Sinison's 139.6; average, 158 bushels per acre.

Celery—Seed Drills—Root-pruning and Pear Blight.

We have been building a celery pit and are confident that we have one that will prove a success. Having a great abundance of celery plants this summer after planting our usual supply in beds, we set abont 300 plants in single rows, four feet apart. These are the plants for the safe keeping of which our pit is intended. Never having had any great success in keeping celery in the narrow trenches used by the Northern growers, we have undertaken to devise something better. Our pit is on a high piece of ground, sloping rapidly southward. It is dug out five feet wide, twelve feet long and about fifteen inches deep. Stout posts at each end support a ridge pole lengthwise four feet high, from which rafters slope into the soil at the sides, the depth of the pit. On these rafters is laid a roof of rough rails, which support an outer covering of sods a foot thick. The north end is closed by a sod wall two feet thick, and the south end will have a similar wall when filled. An opening has been left in the top of the roof for ventilation, and the south end will be temporarily closed with corn stalks until the weather gets severe, when the whole will be sodded up tight. Between the 15th and 20th of the month I propose to lift the celery and pack it in this pit erect, with as much soil as will adhere to it, and after winter sets in and the pit is sodded over completely, do not intend to look at it until the celery in our beds is gone, at which time I hope to find it in fair condition. I omitted to say that the pit has an under-drain to carry off any water that may get inside.

Mr. Watson uses a seed drill. Perhaps if I had to provide as many vegetables as he does I might be compelled to use something of the sort, but my experience with these garden seed-drills has been so unsatisfactory that I should be afraid to trust any of them except for such seed as turnip or cabbage. I have never seen one which would sow beets, parsnip, salsify or prickly spinach, with any sort of success. In sowing beets and parsnips in our heavy soil, I usually drop the seed, a half a dozen or more, in a heap about as far apart as I usually thin them out. This gives them the strength of numbers to force their way out and they stand in bunches convenient for thinning. For my purposes in sowing any kind of small seed, I had rather depend on my thumb and forefinger than on any machine I have ever seen. Mr. W. is to be envied in having gotten rid of trees among his vegetable crops. Here we have not only trees in the way, but our vegetable grounds are cut up by wide walks which renders horse cultivation very tedious, and the raising of vegetables twice or more as laborious and expensive as it would be in a clear open field.

If "N. F. F." will examine what I have written about pear blight he will perceive that I do not say that root-pruning properly done will cause blight. Would "N. F. F." root-prune a tree when in full growth in mid-summer? Root-pruning done in a proper manner and at the proper time is undoubtedly useful in checking a too luxuriant growth of wood, and promotes fruitfulness, but the tearing of roots during the growing season I cannot believe can be other than disastrous to the tree. "N. F. F." says the blight begins at the tip of the branch and moves towards the trunk. If he will cut off a plant of any kind when in a vigorous growth he will find that the top foliage is the first point to show the effect of the loss of the roots. Pear blight is certainly fungoid in its nature, and may remain in a dormant state for a long time until some favorable accident of weather or root injury renders it active, and I believe it is active much more frequently among cultivated trees than among those kept in sod—at least such has been my experience and observation for thirty years. Snap a root which is supplying sap to a vigorous branch. The foliage withers and no longer performs its functions. The fermentation of the sap developes the the fungus and the blight extends to other branches if not arrested. The same state of affairs may be produced in a less degree by sudden change in the weather. Root-pruning performed when the tree is dormant, may be of benefit as a preventive of blight, since trees in too rapid growth are more liable to be attacked than those whose growth is more moderate. This is one reason why sod culture is preferable, as the growth is much more uniform and moderate. In our climate of sudden changes we will always have more or less blight, but by keeping our trees in a fertile sod we may reduce it to a minimum, and if we always plant two pear trees for one which dies we will always have plenty of pears. W. F. Massey.

The Peach Yellows.

Professor D. P. Penhallow concludes, from a careful investigation conducted at the experiment station of Houghton Farm, that peach yellows is not caused primarily by the fungi or parasitic plants, although they may accompany it, and aggravate it by their attacks on the plant weakened by disease; nor is it caused by too much dampness or heat in the atmosphere, nor by excessive drouth, nor by unseasonable frosts or excessive winter cold, nor by want of proper drainage in the soil, nor by the use of fermentable stable manure. The primary cause he considers to be a deficiency in the soil of certain food constituents, especially potash and chlorine, which are well supplied in the well known German potash salt, muriate of potash.

The most striking symptoms of the disease are: unusual features in the cellular structure and contents, which are evident under the microscope only; and excess of lime in wood and fruit, and deficiency of potash and chlorine, which can be detected only by a chemical analysis; premature ripening of the fruit; smaller leaves, with a red or yellow color in place of the usual green; a dark and parched appearance of the bark on the main limbs. The disease appears gradually, first on young branches, from which it spreads over the whole tree; it can be detected by microscopic examination of the cell structure and contents in advance of the appearance of any outward symptoms; of these he considers the premature ripening of the fruit and an unnatural color and flavor as the most important.

In way of possible remedies, use stable manure with caution; trim off diseased branches as far as possible without too seriously mutilating the tree, and cultivate carefully. Apply the following mixture of commercial fertilizers: 25 lbs. kieserite, 100 to 150 muriate of potash and 450 lbs. dissolved boneblack, at the rate 6 to 9 lbs of the mixture to each tree; if the trees are badly diseased, add more muriate, about 4 lbs. to each tree, in spring before growth begins and in fall. Spade the ground as far as the roots extend, mulch with the inverted sods or straw and apply the fertilizer on this mulch, thus avoiding too near approach to the roots. The evidence of this theory of the cause is found partly in the cures that have been effected by this treatment with muriate of potash. The remedy is a simple one for so destructive a disease, and is well worthy of careful trial by all whose peach orchards are attacked by it.

Truck Farming in the South.

The rapid development of truck farming and fruit growing in the South bids fair to bring about an industrial revolution in that portion of our country. A recent writer on the subject says:

"King Cotton has finally been dethroned in the Empire State of the South. The bonanza was first discovered about seven years ago, in Lowndes county, down in southern Georgia, on the Florida line. McRee is the pioneeer who blazed this new road to fortune. Seven years ago McRee bought and settled this place. He had tried cotton to his heart's content, and he was determined to find something better. The first experience in market gardening was cucumbers. He planted a few acres in 'cukes,' and raised several hundred bushels. Out of these he only sent about a hundred boxes to market. The clear profit was about $4 per box.

Since then he has largely increase his operation and from the humble, unsavory 'cuke' alone he now derives an income of $6,000.

"That is wonderful to us of the South, though the North in its great prosperity may smile at the assertion. McRee plants no cotton at all now, but makes an abundance of corn and crab-grass hay for home demands. McRee's water-melons are now the chief attraction on this very attractive farm. He has planted 200 acres of them, and he proposes to have them in northern and western markets by the middle of June. He may reasonably expect to raise, taking last year's crop as a criterion, about 100,000 melons. At a profit of ten cents each, and that is a low average, the melons will bring him $10,000. Then he has cabbages, tomatoes, potatoes and other things, and besides, his first love, the 'cukes.'

"His income from this farm, or rather from the acreage devoted to truck, about 233 acres, clear of all expenses, is about $28,000. That is $120 per acre. In cotton planting, no matter what the yield is per acre, be it never so much or never so little, the income is one and invariable—it is absolutely nothing."

"Lowndes is the pioneer, but it has a brave following throughout southern and middle Georgia. Truck farming has suddenly become a sensation. In the country and small towns you hear nothing else.

There is hardly time for local politics, and as to the presidential candidates, they are myths of the future. Truck farming is far ahead of politics. Associations have been organized, conventions are being held, books and periodicals are being circulated, and railroads are bidding for the transportation of the truck. For the first time in about twenty years the light is breaking on the path of the southern planter."—*Farmer's Review.*

Shrubs.

The common red dogwood is much esteemed by planters for winter decoration, on account of its dark red and crimson colored bark. The variety to which we now draw attention is called Siberica, and its bark is of a bright red color. In the depth of winter the bark is brightest, and a single plant or several together form a most interesting feature in a garden. In the summer its beauty is also apparent for the foliage is of a pleasing green color and the white flowers which it produces in spring are followed with purple fruit. This is not by any means a new shrub, nevertheless it is rarely found. Its merits have been withheld from the public long enough, and I trust it will soon receive the recognition to which it is justly entitled.

Shrubs of this character are doubly valuable, being ornamental and effective both in summer and in winter. The crimson and red branches of these two varieties, when placed in contrast, produce a very pleasing result.

Cornus Sanguinea Elegantissima. In this we have a new claimant for public favor. Its origin I cannot give, but when in Europe two years ago, I found it in one of the nurseries, and was much impressed with its beauty and value. Fancy a red dogwood with handsome variegated leaves, or rather having its leaves broadly edged with silvery white. Cornus mascula variegata has long been held in high regard on account of its distinctly variegated foliage. In some particulars this new variety of sanguinea will surpass it. The variegation is brighter and the shrub more rapid and less formal in its growth, hence it can be made use of in a greater variety of ways. As a new shrub of high promise it will certainly receive a great deal of attention.

Prunus Pissardi, or Purple-leaved Plum, is a novelty sent out from Paris last year. Its leaves are purple, the color is permanent, and I think this new plant will prove to be an acquisition.

A pure white Weigela of good habit of growth, has long been sought after. During the last few years several so-called white varieties have been ushered into notice, but the flowers nearly always turned out to be blush and frequently rose colorod. Hortensis nivea, the old variety which bears pure white flowers, and which is comparatively well known to nurserymen and florists, has not been disseminated, being extremely difficult to propagate. Its habit of growth also is quite unsatisfactory. Hence Candida, which is a strong upright grower and an abundant producer of pure white flowers, will at once be pronounced a desideratum. It has the additional merit of being a perpetual bloomer, flowers being upon the plants nearly all summer. Nurserymen will have no difficulty in obtaining a stock as it can be easily propagated.

Other new Weigelas which appear to be very promising, are Lavallei, a variety with reddish purple flowers, the darkest of any. Its habit, however, is loose and spreading. Edward Andre, a later introduction, bears flowers of a very dark shade, and is a better grower.

P. Duchartre produces flowers of a clear amaranth shade, which contrasts finely with the yellowish foliage of the plant. Hendersoni bears medium sized flowers of a red color. Both of them have a good habit and are free bloomers.

Spirea cratægifolia is not a new variety, but quite rare. It resembles the well known lance-leaved, in color, size, and form of the flower, but differs from it in foliage, and it has the valuable characteristic of being more hardy. I consider lanceolata a grand shrub, and in localities where it is hardy it comes out in spring, loaded with pure white blooms, and a large plant resembles a mass of snow, affording a striking contrast with the profusion of green which prevails at this season. But it often happens that much of the flowering wood becomes injured, hence, an equally fine variety, possessing greater hardiness will be an acquisition. I think we shall realize the improved form in cratægifolia. While on this subject, I shall not fail to refer to another improved variety of lanceolata, which has given much satisfaction. It is called Lanceolata robusta, which appears to be more vigorous, hardier, and its flowers are larger.

Spirea Van Houttei is another form, distinguished for its hardiness.

There is another addition to the family of Spirea which is quite novel. It has received a rather indefinite name, being called species Japonica. It appears to be closely allied to the type Callosa, and like that species, does not grow large, but forms a symmetrical bush and yield an abundance of flowers all summer. Its regular shape and small habit of growth will make it useful for borders of groups, and for planting singly on lawns of small extent.

The golden Syringa is a most charming golden-leaved shrub. When planted alone or associated with other shrubs in a group; its bright and delicately tinted leaves create a pleasing effect.

We now come to consideration of one of the most important acquisitions made recently, Xanthoceras Sorbifolia, for this is the

name of the new aspirant. It comes from Mongolia, or the centre of China, where it was found by the Abbe David, and brought to Paris about 1869 by a Frenchman named Pichou. It is of medium size, forming a shrub or small tree not exceeding ten to twelve feet high. Its leaves resemble somewhat those of the Mountain Ash and its flowers are five petalled, white, and reddish copper colored at base, and disposed in racemes. They appear in April and May at the same time that the leaves are developed. The flowers are succeeded by fruit.—*W. C. Barry.*

A Good Way to Plant Spring Bulbs.

The *American Garden* gives the following somewhat novel way of planting:

The only objection made to beds of spring bulbs is, that though beautiful beyond description while the bulbs are in flower, the time of blossoming is short; and thereafter the beds look bare and are not available for other purposes. This fault can be overcome by a little management, and the use of such bulbs as bloom successively. The following arrangement has proved successful with us for several years:

Make a round bed of any size and plant an inner circular row of crocus, and next outside a row of hyacinths; then a second row of crocus, and next one of tulips. Continue this until the bed is filled—making every second row crocus, and alternating hyacinths and tulips between them. The row on the extreme edge must be crocus, and the space inside of the first row should be filled with tulips or hyacintha. The effect of a bed thus prepared is extremely pretty a long time, and thus arranged, it may remain undisturbed two or three years.

Snow has no sooner gone than the bed is bright with the cheery little crocus, which apparently covers the whole surface. These will hardly have passed away when we have a bed of a hyacintha, in all their delicate, lovely tints. The tulips then form a climax of gorgeousness that will last till the middle of June. The foliage of the crocus, which is extremely delicate and pretty, is in perfection during the flowering of the hyacinths and tulips, and covers the bed as with a lovely green carpet, taking away the usual bare look of bulb-beds when out of their time of bloom. Still another succession might be had by scattering the bulbs of the Spanish Iris through the bed. They are perfectly hardy, with slender foliage, and furnish exquisitely beautiful flowers in every shade of blue, purple, white and even chocolate. These, following the tulips, need only seeing to be appreciated.

English Ivy.

The use of English ivies for the purpose of decorating living-rooms is more extensive every year, and cannot be too highly commended. Being very strong, they will live through any treatment; but study their peculiarities and manifest willingness to gratify them, and they will grow without stint. Most houses are too hot for them, as indeed they are for their owners. Neither plants nor people should have the temperature over sixty-five degrees Fahrenheit. Take care not to enfeeble your ivies by excessive watering or undue heat, and you will see they will not seem to mind whether the sun shines on them or not, or in what position or direction you train them. Indeed, so much will they do themselves to make a room charming, that we would rather have an unlimited number to draw upon than any thing else in nature or art.

Do you wish the ugly, plain doors that shut off your tiny entry to your parlor to be arched or curved like those in the drawing-rooms of your richer neighbors? Buy a couple of brackets, such as lamps for the burning of kerosene are sometimes placed on, and screw them in the sides of the door. Put in each a plant of English ivy, the longer the better; then train the plants over the top against the sides, indeed, any way your fancy dictates. You need not buy the beautiful but costly pots the flower dealer will advise: the common glazed ones will answer every purpose, for, by placing in each two or three sprays of Coliseum ivy, in a month's time no vestige of the pot itself can be discerned through their thick screen.

The English Ivy, growing over the walls of a building, instead of promoting dampness, as most persons would suppose, is said to be a remedy for it; and it is mentioned as a fact that in a room where dampness had prevailed for a length of time, the affected parts inside had become dry when ivy had grown up to cover the opposite exterior side. The close, over hanging pendant leaves prevent the rain or moisture from penetrating the wall. Beauty and utility in this case go hand in hand.

The Ornamental Eulalias.

The list is not long of hardy grasses that can be used for ornamenting garden or lawn. The eulalias—introduced from Japan by Thomas Hogg—are about the best of the class. Their variegated foliage makes them, even if their habit of growth were not graceful and striking, an object of beauty from the time they first start in the spring, even before the plumes or flower-panicles appear. There are two varieties—E. japonica variegata, and E. japonica zebrina. Both have been found to be perfectly hardy in any part of the United States. The grass is cut down by frost to the root, and without the need of any protection will keep through the winter like any hardy herbaceous plant, starting to grow again in early spring. After a few frosts the grass becomes a brown, unsightly object, and should be cut off close to the roots; then if a few forkfuls of coarse manure are thrown over the roots (though not at all necessary to its preservation during winter), the advantage will be seen the next summer in stronger growth, brighter variegation and larger plumes. These grasses can be planted in beds or clumps, or singly on the lawn.

Eulalia japonica variegata grows from four to six feet in height; the leaves are alternately striped, white and green, after the style of the old-fashioned ribbon-grass. The leaves are longer than the latter and of more width and substance. In September it throws up its flower spikes or plumes, one from each stalk; these are borne about eighteen inches above the grass. The flower-spikes are at first of a golden-brown color, with erect branches, similar to a corn-flower, only much finer and handsomer; as the flowers open, the branches of the spike curve over gracefully in a one-sided manner. The flower-spikes when dried will keep for years; and, being very ornamental, can be used with good effect in vases or grass bouquets. In drying them, cut the plumes when in blossom when the pollen will come off in a cloud when shaken. Set them upright or slightly one-sided in a dry place, and in a few days the plumes will expand, each branchlet gracefully curling up and taking on a feathery appearance resembling very much an ostrich feather.

Eulalia japonica zebrina, unlike E. variegata, is striped or marked crosswise of the leaf, which is similar in size and shape to that of E variegata, with bands of creamy which vary in width from half an inch to to two inches. I do not think there is any plant or grass in cultivation that is so oddly variegated, there is surely none whose markings are so striking and well defined, and which holds its color so well. This variety is of stronger growth than E. variegata, the average height being from five to seven feet. The plumes are put out in September and can be saved the same as those of the other variety. They are not quite so thick and bushy as the plumes of the latter, neither do they curl up so prettily. Both varieties are propagated by division of the root; seedlings do not show any variegation. Last month, from a clump of zebrina five years old, two feet in diameter at the root and six feet in diameter four feet from the ground, I cut over 200 plumes; and from a clump of variegata, set out from a four inch pot three years ago, I cut nearly 150 plumes. These clumps have had a small quantity of coorse manure overs and around them every winter.—*N. Y. Tribune.*

Fruit Evaporating in Virginia.

A firm from Rochester, N. Y., Messrs. Hatch & Curtis, have gone into the business of drying apples at Harrisonburg, Va. The Offett Building, the largest in the place, is occupied for the purpose; and the *Commonwealth* says its reporter found it with all the indications of a bee hive, minus the stings—the sweetness was there, as reflected from the smiling, happy faces of about twenty-five of our Harrisonburg ladies who were engaged in paring and slicing the apples. Every employee of the establishment was busy. This industry gives employment to about forty of our citizens, and will continue until the middle of December, possibly longer. Nearly 2,000 bushels of apples have already been delivered, and Messrs. Hatch & Curtis have contracted for about 10,000 bushels more. The apples are first taken regardless of condition or size, pared, sliced and cored, which is the work of a few seconds, as it is done by machinery, then passed to hands, who remove all particles of peelings, specks, bruised or rotten places.

The machinery, or rather the implements, used in the factory, are few and simple, consisting of furnaces, trays, sieves, evaporators, bleacher and pearers. The furnaces, two in number, which are nothing more than large, odd-shaped stoves encased in galvanic iron cylinders, are seated on the first floor and are heated by coal. The hot air in the cylinders, mentioned above, is carried through large tin pipes to the evaporators on the second floor. The evaporators are about eight feet high, ten by four at the base, and six by four at the top, glass doors, and lined throughout with asbestos. In these the fruit is placed on wire sieves, where in about four hours it is thoroughly dried and ready for shipment. The preparation of the fruit for the evaporator is all made on the first floor. The pearers, which peal, core and slice, are arranged on tables, one hand operating each machine. For this work females are preferred, and for which five cents per bushel is paid. An expert hand can peel from twelve to fifteen bushels per day. It is next placed in the bleacher, in which process sulphur is largely used. The capacity of the factory is about 200 bushels of green apples per day. The price paid is from twenty to thirty cents per bushel, according to size and quality, though almost any apple that is sound can be used.

There is no waste in any shape, as the cores and pealings are conveyed to the new building, and hoisted to the top floor, which is a flooring of lath; each lath being one inch in width and one inch apart; on the first floor is erected a large square brick fireplace, in which is kept a glowing coal fire. This fire creates the heat to dry the offal. After thoroughly dried they are shipped in barrels to Northern cities and made into jellies of various kinds, such as strawberry, pineapple, apple jelly, &c, &c.

This fruit-drying factory is quite a benefit to all classes: it gives our fruit-growers a home market, without the trouble of picking and culling their fruit and losing their cuttings. The dried fruit as done at this factory is unlike the ordinary fruit dried in this section. This, when dried, retains the flavor and juice, and when cooked it is difficut to distinguish between the dried fruit and fresh.

Messrs. Hatch & Curtis are energetic, live business men, and are doubtless making money by this enterprise. It is a matter of wonder that the idea never struck some of our home people. We wish them abundant success.

Rotation of Crops for Milk Dairy Farm.

A dairy farmer gives his experience in regard to the management of a milk dairy farm, upon which some grain is grown and soiling is practiced, as follows:

No dairy can be managed profitably without some soiling and a field of roots for winter use. Pasturing is convenient, but not profitable, except on cheap land. Where land is high-priced, and where labor is costly, one must make the land produce enough to feed more cows, or at least to keep them in full flow all the time. This can only be done by growing some fodder crops. A seven-year rotation is very convenient for a mixed grain and dairy farm. There will be a field of wheat, one of barley or oats, one of corn, one of roots, one of clover or fodder crops, one of grass and clover, and one for pasture. By keeping the land under crop all the time some fields will produce two crops in the year. For instance, I will go through the treatment of one field for the seven years, and all, of course, will come under the same rotation. Let us begin with a field newly seeded to timothy and clover with wheat. This is cut for hay, and as soon as the hay is off it is top dressed with plaster and some artificial fertilizer, a mixture of 150 pounds of bone flour and 100 pounds of nitrate of soda. This will help to produce a second crop as heavy as the first, and excellent pasture the second year. It is plowed the third year for corn, well manured if possible. Then follows a crop of mangels and fodder corn for soiling, after which follows barley or oats seeded with clover the fifth year; the sixth year the clover is cut for hay, pastured and turned under for wheat, which brings us to the beginning again. If instead of clover the barley or oats is followed by fodder crops, a great quantity may be produced. For instance, as soon as the barley or oats is cut the ground is plowed and planted with Early Canada or Evergreen Sweet corn, in drills three feet apart, and seeds one inch apart in the drill. Four to six tons of the best cured fodder can thus be grown on an acre, and the ground can be sown late in the fall to rye, which can be cut in June green for green fodder, or cured for hay, and a crop of corn fodder again taken off in time to plow the ground for wheat. By using some artificial fertilizer, at a cost of $5 or $6 per acre, a crop worth $30 can be grown, and the ground left in better condition for wheat. All this fodder will feed a great many cows. It is in this way that the most can be made of the land, and the land be increased in fertility year by year.

PROBABLE YIELD OF CROPS.

The yield of crops grown in such a rotation on 64 acres should be as follows:

Eight acres of wheat, bushels	200
Eight acres of oats, bushels	400
Eight acres of corn, bushels	400
Four acres of mangels, bushels	3,000
Three acres of fodder corn, tons, green	60
Seven acres of hay, tons	10
Eight acres of clover, tons	16
(or of green fodder, 100 tons.)	
Eight acres of pasture.	

In addition there would be about 20 tons of straw and 20 tons of corn-stalks. A farm of 64 acres thus managed, and in good condition, should feed at least 25 or 30 cows. I would certainly advise that one field be cultivated in fodder crops adjoining that used for pasture, and that these crops be fed in racks on the pasture-field, by which it would be highly manured and fitted to produce 100 bushels of corn per acre.—*Dairy.*

The American Farmer

"O FORTUNATOS NIMIUM SUA SI BONA NORINT "AGRICOLAS." . . . . . *Virg.*

PUBLISHED ON THE 1ST AND 15TH OF EVERY MONTH,

By SAMUEL SANDS AND SON,

At No. 128 West Baltimore Street,

(*Sign of the Golden Plow,*)

BALTIMORE, MD.

WILLIAM B. SANDS, Proprietor.

SAMUEL SANDS, WM. B. SANDS, } Editors and Publishers.

Dr. THOMAS POLLARD, Associate Editor.

Richmond, Va., Office, 619 W. Main St.

SUBSCRIPTION:

$1.50 a year, in advance. Clubs of five or more will be supplied at $1 each.

ADVERTISING RATES:

	1 Time.	1 Mo.	2 Mo.	3 Mo.	6 Mo.	12 Mo.
1 Inch 12 lines	$1.25	$2.25	$4.00	$5.50	$9.00	$15.00

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☞ At the office of THE AMERICAN FARMER are located the offices of the following organizations, of each of which its proprietor, Wm. B. Sands, is secretary:

Maryland Horticultural Society.
Maryland Dairymen's Association.
Maryland State Grange, P. of H.
Agricultural Society of Baltimore Co.

Also, of the **Maryland Poultry Club,** Thos. W. Hooper, Secretary.

BALTIMORE, NOVEMBER 15, 1883.

AGRICULTURAL EXPORTS.—The Bureau of Statistics, in its report, shows that for the year ending September 30, 1883, the excess of exports over imports from all United States ports was $117,336,079, while in the twelve months to Sept. 30, 1882, there was an excess of imports over exports to the amount of $12,054,492. This makes a trade balance $129,390,561 more favorable than last year. This change in the situation was the result of an increase of $92,764,866 in exports, and a decrease of $34,744,662 in the imports. It is the surplus breadstuffs, the cotton and the meat produced by American farmers that put this balance of trade on the right side.

Maryland Improved Live Stock Breeders' Association.

The quarterly meeting was held on the 14th instant, the attendance not being large.

The main business was the reception of reports of committees appointed to frame and submit laws for the protection of sheep and for the prevention of infectious and contagious diseases among live stock. Mr. R. E. Dennis, of Howard county, reported as a model for a general law, a sheep and dog law prepared for Montgomery county at the last session of the Legislature, and which passed the Senate and failed in the House. It was ordered printed and distributed.

Mr. W. H. Moore, chairman of the committee, submitted draft of a bill to prevent contagious diseases among live stock. It provides for the appointment by the Governor of a Chief Veterinary Inspector with large powers. It also further provides for the appointment of assistants in cases of threatened epidemic. Animals brought into the State can be stopped and examined, the stock yards inspected, buildings disinfected where disease has been, or destroyed if necessary, and diseased animals slaughtered and infected herds quarantined. A proportion of the loss is to be paid by the State. It includes the stamping out and prevention under the act of diseases in cattle, horses, sheep, etc., and penalties are prescribed for selling diseased animals or carcasses. The bill was referred back to the committee to make some alterations in the bill, and it will be reported to the February meeting, which will send it to the Legislature.

Dr. Ward, State Veterinary Inspector, read a paper defining the several diseases which affect animals, including pleuro-pneumonia, glanders, etc. He spoke of the advantage the proposed bill would be in enforcing measures to protect live stock. He said he had closely examined into reported cases of pleuro-pneumonia, and the few instances where it was found are all known. There have been no new cases, and the extent of the disease has been exaggerated. The society adjourned until February.

JAPANESE PERSIMMONS.—Messrs. Franklin Davis & Co., recently exhibited to us some fine specimens of this fruit, with the tree upon which they were grown. This tree was one of a quantity imported by this large and enterprising firm from Japan and was planted out near Norfolk, Va. Others planted at the country place of Mr. Davis, a few miles from Baltimore, have done well, standing out through last winter. The fruit shown was of bright color and large, the specimens varying from two to three inches in diameter. If this fruit can be made to accommodate itself to our climate it will be from its lusciousness and good qualities a valuable addition to our cultivated sorts. Grafting on native stocks has not been a success, but the trees brought over from Japan have done well, after enduring some rough treatment.

CROP REPORTS.—The November report of the Department of Agriculture shows that the corn crop will be about fifteen hundred and seventy-seven million bushels, or about forty million bushels short of the previous crop. In the Southern States Maryland averages 23.5 bushels per acre, Virginia 14, North Carolina 12, South Carolina 8, Georgia 9, Florida 8.5, Alabama 11.5, Mississippi 13.5, Louisiana 14.2, Texas 17.5, Tennessee 20. New York averages 22, New Jersey 28, and Pennsylvania 28.5.

Received.

"THE LAW OF HEREDITY."—A Study of the Cause of Variation and the Origin of Living Organisms. By W. K. Brooks, Associate in Biology. Johns Hopkins' University.

Attracted by the above title and prejudiced in favor of the author and of the great university under the auspices of which he addresses the public, we have carefully examined the work. We had hoped that we should find much interesting and important to breeders of improved live stock, on a subject of fundamental interest to them. We are constrained to report that we are disappointed in that expectation. The work, so far as we are able to comprehend it, seems to be addressed especially to naturalists by profession. The author is evidently unfamiliar with breeding as a science or with the phenomena of heredity, except at second hand. On the title page the following dedication appears: "To the memory of Charles Darwin, from whose published facts I have drawn most of the material for this volume." The object of the book seems to be to bring forward a sort of amendment to the hypothesis of pangenesis, the most curious production known to the history of science, in its original form, and, as now amended by Mr. Brooks, it appears to us more curious still. Mr. Darwin himself was possessed of a most laborious and painstaking imagination, of which, what he called his tentative hypothesis of pangenesis, was the most astonishing fruit. How the new pangenesis of Mr. Brooks will be received by naturalists, we cannot pretend to foretell. But if the hypothesis is regarded as a failure in Mr. Darwin's hands, we think it likely not to succeed in the hands of the talented young associate of Johns Hopkins, and here we leave the question and the book.

AGRICULTURE IN THE SOUTH.

Progress in Agriculture—Is there any Room for Further Improvement?

BY TH. POLLARD,

Ex-Commissioner of Agriculture of Virginia.

In our last we were urging farmers to read and study their professions, expressing the opinion that there was much room for improvement in agriculture in this direction. We regret that such small a proportion of farmers take agricultural journals or read books on farming. The doctor is obliged to read, or lag behind in his profession, ignorant of the improvements going on, of new discoveries, of important medicines, and of new inventions in surgical appliances and improved methods in surgical operations; the lawyer must read, not only to have at his finger-ends all the established principles, of law, but to know of all the recent decisions of the courts bearing on his profession, or else remain ignorant of them; so must engineers, railroad men, master mechanics, conductors of mines, manufacturers, all read, or else be uninformed of the progress being made in their respective callings. Then why not farmers? Almost every farmer of any intelligence takes a political paper and reads all the political and other news. This is right; but why neglect agricultural reading? Which of the two is most important? It may be asked, what shall we read? First, let every farmer take a good agricultural journal, of which there are so many published. We stop to remark here that a very intelligent farmer of Virginia, and a successful breeder, some time since told the writer that he took twelve agricultural journals, and he believed that *each number of each journal* paid him for the yearly subscription. Then beside the journal, let every farmer buy, or if he cannot afford to buy, borrow, if he can, some standard works pertaining to his avocation. Such books are "How Crops Grow," by Johnson; "How Crops Feed," by Johnson; "The Farmers' Book," by Dickerman and Flint; "New American Farm," by Allen; "Scientific Agriculture," by Pendleton; "American Cattle," by Allen; "Sheep Husbandry," by Randall; "Sheep Husbandry for the South," by Hayes; "The Sheep," by Youatt; "The Pig," by Harris; "Swine Husbandry," by Coburn; "The Horse," by Youatt; "The Horse," by Stonehenge, (the latter decidedly the best work, but much more costly;) "Grasses and Forage Plants," by Flint; "Journal of the Royal Agricultural Society of England;" "Farm Implements and Machines," by Thomas; "Food of Animals," by Thompson; "Scientific and Practical Agriculture," by Campbell.

If information is wanted on drainage, irrigation, grape culture, fruit culture generally, gardening, and insects, then read "Drainage," by Waring; "Irrigation," by Stewart; "Insects Injurious to Vegetation," by Harris; "Fruits and Fruit Trees," by Downing; "Grapes," by Fuller or Husaman; "Three Years in European Vineyards," by Flagg; "Gardening for Profit," by Henderson.

Valuable information for the farmer will also be found in the Reports of the Agricultural Dept., and of the Patent Office, (in the earlier history of our Agricultural Department it was united with the Patent Office, and the reports were issued from the latter department,) and the reports of the different State Agricultural Departments, particularly those from Massachusetts and Tennessee.* In addition to a farmer's journal those who wish to raise stock to the best advantage, should take some good stock journal, of which we know none better than the "National Live Stock Journal," and the "American Stockman," published in Chicago, and the "Kentucky Live Stock Journal," Lexington, Ky. But we would not have our farmers neglect to patronize our Southern agricultural journals, which only need patronage to make them equal to the best. The farmer can scarcely be expected to need all of the above authors, but let him select from those he may consider best suited to his wants. The "Farmers' Book" will be found very comprehensive and useful. The "American Farm Book" is also very valuable. Randall and Hayes on "Sheep Husbandry" are both practical and well worthy the attention of sheep raisers. Stonehenge on the "Horse" is the most valuable work we have seen on this subject. Johnson's books may be rather scientific for some farmers, but if studied out they will be found very useful and instructive. If one wishes to consult a work giving more of the botany and classification of plants than is contained in Flint, then let him procure "American Weeds and Useful Plants" by Darlington, but Flint is an excellent work, and the reader will be much aided by the plates of the different grasses and plants. We may here add that the "Journal of the Royal Agricultural Society of England" is a work of much value, and the farmer who can get access to it will be fortunate. It may be found in the library of the State of Virginia.

As regards the education of farmers' sons, it is a matter of much importance, and particularly to advancement of agriculture if these sons are to become farmers, they shall be so educated as to advance and improve on the good work carried on by their fathers. While a good general education, embracing the languages, ancient and modern, the sciences, the philosophies (natural, moral and mental) and mathematics, is greatly to be esteemed, still a young man destined for the farm, should receive an education looking especially to his calling. Some of the languages may be omitted, (but by all means save the English and make him master of his own tongue,) mathematics, beyond a good understanding of all contained in the arithmetics, may be omitted, and "How Crops Grow" and "How Crops Feed" be substituted. Mathematics cannot benefit a farmer, and, indeed, very few others in after life. How many of us who have graduated in algebra and geometry can now work a sum in the former or a problem in the latter, and of course the same is applicable to the higher mathematics. In place of the languages, let botany and a study of the habits and growth of the plants and grasses be substituted along with how to breed and feed stock to the best advantage, what particular fertilizers each crop requires, what soils are adapted to particular crops, what soils are deficient in potash and ammonia (all need phosphoric acid in form of phosphate lime), what soils require drainage and how to do it, how to test seeds, and how and when and in what quantity per acre to sow them, when to harvest crops, and how, and particularly as regards grasses for hay, how to plow and cultivate land, how to manage farm machinery, the advantages or disadvantages of preserving

*The writer, when Commissioner of Agriculture of Virginia, prepared essays on "The Hog," and on "Sheep Husbandry for Virginia," copies of which, with some of his reports, he thinks, may be obtained by application to Dr Blanton, "Commissioner of Agriculture," Richmond, Va.

forage in pits, and how to build a silo, and, indeed, how to do everything connected with a farm, to be conducted on the most approved modern principles of agriculture. To accomplish all this, we must look to agricultural colleges and agricultural experimental farms, to be supported, in a measure at least, by State patronage. Many of the States now have agricultural colleges, and a few experimental farms are conducted on a small scale. Let the States aid and increase those and let the farmer patronize them. In the meantime, when farmers' sons are sent to our colleges now existing, let them, if they are designed for farmers, have reference to that fact. Let particular attention be paid to the natural sciences, including chemistry, with omission, if necessary, of languages and mathematics, though a knowledge of at least Latin and French is very desirable. Another advantage of the proper education of farmers' sons is that it will give them influence in society and in shaping the legislation of the country. While a political life is not desirable, farmers should not shirk representation of the people in our legislatures. There is no reason that legislation should be given up to lawyers and doctors and regular office-seekers who hope to live by office, unless it be that farmers' sons are not being sufficiently educated to cope with the classes just mentioned. Farmers have frequently complained that they do not have sufficient influence in shaping legislation and that they cannot get such laws passed as their interests require. Let them educate their sons properly for any position, and thus make them men of influence, and in the meantime, let them club together in every county and send more farmers to our legislatures and to congress. There is no reason why they should leave nominating conventions to be controlled entirely by the political wire-workers.

Charcoal as a Food.

Whatever increases the power of laying on fat, or promoting the rapid and healthy production of flesh, must be food or equivalent thereto. This pure charcoal does most effectually, as recently proved by taking the live weights of two lots of sheep, and simply separating them by an ordinary net, the artificial food, corn, and cake being carefully weighed out to each lot alike daily, one pint of charcoal being added to one lot only. When re-weighed prior to selling to the butcher, the increase in weight was in favor of charcoal by 16 1-4 per cent. Sanitation causes easy and complete digestion, and assimilation only can account for these results, which charcoal alone can accomplish. The charcoal should be given mixed with the food, except in urgent cases, when it may be mixed in water or thin gruel, and given as a drench. The dose is one pint to every twenty-five head of sheep or lambs. One quarter pint per head for full-grown cattle, horses or pigs; half the quantity for young cattle, and two teaspoonfuls to one dessert-spoonful for young calves, daily, when suffering from disease, or in ill condition. To keep in good health, and fortify against diseases, the dose should be given two or three times per week according to the class of food they are having, and the state of the atmosphere. The best plan is to wet a quantity of bran, pollard, or malt combings; mix the charcoal amongst it, and then amongst the food you give them. For rapid and healthy fatting of cattle it should be used daily amongst their food. Charcoal for internal and medicinal purposes must be pure vegetable charcoal, free from all irritating and injurious foreign matter. The charcoal, when coming into the user's possession, must be kept perfectly dry and free from any ill-smelling surroundings, such as the vapors of a stable or artificial manures, etc., or it will absorb them and thus become septic, and of no medicinal value. It is better kept in a closed bin or tin canister with a closely fitting cover.—*Farm and Home.*

Farm Buildings.

Since a considerable part of every farmer's capital is locked up in farm buildings, his success or failure often depends, says a well-considered article in the *American Cultivator*, upon the extent and character of this class of investments. The money spent in buildings, especially in the case of the farmer who is in debt or whose land needs improvement to make it produce to a profit, should be limited to that which is necessary for use and comfort. For instance, the desire for display and extravagance in the matter of the home has often crippled the farmer's efforts to improve the farm. A house too costly in its construction has been the ruin of many a farmer, since the larger the building the greater the expense of furnishing, heating and keeping in order. Houses costing $5,000 to $8,000 each are unsuited to the requirements of average farmers. Near large cities, where farming is of the amateur style rather than of the practical, such expensive structures may not be out of place, but many of our best and most prosperous farmers would not exchange their humbler and more comfortable houses for these pretentious mansions, even at equal cost. The expense of repairing, painting and keeping up a large house, and the cost of heating it during the cold season, is not offset by the increased style and grandeur. The occupancy of expensive premises is apt to stimulate habits of extravagance in other respects.

Farmers in the finest agricultural regions of Pennsylvania have immense barns, which are an index of the productive capacity of their fertile acres; yet these same cultivators have but small and often inconvenient houses for themselves. Perhaps the economic ideas of these sober Dutch settlers have been pushed to an extreme, and their own comfort may be sacrificed to a certain extent; yet this fault is more easily remedied than that of extravagant outlay. When the farm is thoroughly improved, and the barns and sheds are in good shape, it is comparatively easy for a farmer to put up almost any kind of residence for himself and family that good taste and good judgment may suggest. To reverse this order by first erecting a costly mansion is not so profitable, as many men have found to their cost. The fine, expensive house adds nothing to the farmer's ability to bring up the productive capacity of his soil. The good barn, particularly if it has a warm basement for keeping stock, does add very materially to the possibilities of the farm.

The judicious planning and erection of farm buildings demands the careful thought of the experienced farmer. The convenience of farmers will be greatly promoted by placing the farm buildings, and especially the barns, as nearly as possible in the centre of the tilled land. The crops have to be drawn to, and the manure from, the main barn, and the saving of carriage from having the barn centrally located is an important item in the economy of the farm. Very often it is the point which determines whether the farm, or the outlying portions at least, shall be profitable or otherwise. We have known many farms where the far-off lots, receiving little or no manure, have steadily grown poorer until they became too unproductive for profitable culture. On a farm of fifty acres or less this difference in distance between the fields is less noticeable; but on larger farms the best scrutiny for general distribution of manure will be found in having the barns and barnyard as nearly in the centre of the farm as other conditions will permit. For the same reason the buildings should not be located on a steep hill or in a deep hollow.

The barns for stock should, if possible, front to the east or south, so that the barnyard may be partially sheltered from the severest winds. Where there is an elevation of a few feet it is easy to construct a deep basement, with a comparatively slight rise above the surface for a roadway. The basement should, if possible, be nine feet deep, and with wide doors, so that wagons for drawing manure or grain may be driven under it. One of the best arrangements of this kind is a trap-door at one side the floor, down which bags of grain may be slid upon the waiting wagon below, thus saving the heaviest labor of lifting. The same trap-door is also handy for throwing down hay or other feed to be distributed to the stock below.

Every basement barn should be supplied with a cistern in the corner best protected from the cold, to hold water for the stock. The rain-fall on a barn of ordinary size, say, 40x60 or 80 feet will, in average years, keep an 80-barrel cistern full enough at any season. A cistern of too large dimensions is not desirable, as it is very important that it be cleaned out occasionally, and the smaller the receptacle the more frequent the opportunity for cleansing. The water for stock can be drawn from near the bottom of the cistern, and by regulating the flow it may be allowed to run all the time, so that the ordinary demands of the stock may keep water in the drinking tub from overflowing. The advantage of having good water at all times under cover, and always unfrozen in winter, is very great in respect to all kinds of stock. Milch cows often suffer, causing disease, in their yield of milk rather than go a few rods from comfortable quarters for a supply of water. If the requisite water is provided under shelter, cows will drink several times per day, and will be in no danger of overloading their stomachs at any one time with a large quantity of cold water.

One of the most important of all farm buildings is a shed for storing wagons and various farm implements. It is better in the storage of wagons to have the floor of earth rather than of boards, but the shed should be made tight above and at the sides, to exclude rains, snow and drying winds. On most farms several hundred dollars' worth of farm tools are exposed to the weather, which might be housed in a building that need not cost more than $50 to $75. The saving in setting wagon tires alone will nearly pay the interest on the cost of a building to keep them under cover. The hen-house should rarely or never be placed close to the grain or house barns, and absolutely never where the hens can get at the tools and wagons to roost on them. The manure that hens make will well pay for housing them at all seasons; while their capacity for profitable egg production demands that the house be made entirely comfortable in winter. If possible, it should be so arranged as to give a southern or eastern exposure; and, if built of boards, should at least be double battened as a protection against cold.

The Grange.

THE NATIONAL GRANGE meets in annual session in Washington, D. C., on Wednesday, November 21. The Master of the Maryland State Grange has issued a circular expressing the hope that, as this point is so convenient, as to be practically within the territory of this State, that a large delegation of visitors will be present from Maryland. Pursuant to a resolution of the Maryland State Grange the National Grange will be asked to confer the 6th degree on the evening of Friday, 23d instant.

MONTGOMERY COUNTY GRANGE, No. 7.—A large and enthusiastic meeting was held at the hall of Gaithersburg Grange on 25th of October. The whole of the morning session was occupied in discussing the "Tariff," as to whether free-trade or protection will best advance the interest of the farmers. A committee was appointed to gather statistics, and the subject will be again considered at the January meeting.

The County Agricultural Society also received a good deal of attention; the annual fair having been far from the success it ought to be in this prosperous county, ways and means were considered of putting new life into the Society, and of making farmers take an interest in it.

Home Department.

A Fair Experience.

It is something to be thankful for when one is privileged to see anything worth seeing, for the first time, after arriving at an appreciative age. Familiarity, although not necessarily leading to contempt, certainly does not enhance the value of ordinary things. I was therefore prepared to do full justice to the occasion when I for the first time, this autumn, visited the agricultural fair grounds. Of course the newspaper accounts from year to year prepared me somewhat, as to what I was likely to find there, yet they by no means convey to the uninitiated a clear idea of the way in which the vast multitudes who throng there, are instructed or amused.

With the exception of a couple of hours at the Hagerstown fair, my first experience was gathered at the one held in Montgomery county. It is not my intention to draw comparisons, as it would require more experience to do so justly, as well as equal opportunities for observation. My time and movements were extremely limited at the first, whereas at the latter I had most of two days in which to study the merits of things, individually and collectively. At Rockville, the grounds are conveniently and beautifully located. The approach to them is easy and pleasant, and the visitor is neither annoyed nor subject to extortion by the necessity for riding. Although Rockville is taken at a disadvantage by the B. & O. which merely touches the elbow of the town and then turns away altogether, one has only to pass a hundred yards or so on the way to the fair grounds to get a glimpse of as pretty a country town as any of its size to be found in or out of Maryland. Having caught this pretty picture, an abrupt turn soon brings you to the magnificent oak grove which is the prelude to the fair grounds, and once there, it is easy to forget Rockville altogether, for there is neither roof nor spire visible from within the enclosure. My first impression after entering was that I had stumbled upon a camp meeting; the appearance of the grove and sounds of the various pedlars, conspired to give it that effect, but as soon as I could take a good look at it, the scene took quite another character. With such beautiful and well shaded grounds as they have, it seems a pity the fair could not be held earlier in the season when everybody luxuriates in such things. However, the autumnal glories are not to be despised, and the sadness which lies in the rustling of the fallen leaves is soon forgotten in the multitude of diverting influences. Friend meets friend and each seeks to draw the other to some object of interest, and in their search for these they encounter others bound on like missions, until the happy greetings and outspoken surprises, create a hum of cheerful notes, that are doubtless music to the silent watcher. After all I am disposed to think the multitude are drawn more by this indescribable effect of a good natured crowd, than by any special attraction the fairs offer.

However, as my errand there was matter of fact and not sentiment, I must give attention to the realities of the occasion. My duty lay within the building appropriated to household matters chiefly. The committee of which I was a member was through kindly forethought composed of those who were so entirely friends and at ease with each other, that constraints or misapprehension which might arise between strangers

was easily avoided. We were assigned to the department of the useful and beautiful in fancy and fine art, and were expected to bring our humble judgment to bear upon the beautiful creations of the Almighty, brought to the highest state of perfection by by His creatures, and upon the nice workmanship of fingers whose skill manifest a creative power born of the Great Creator. Truly the most experienced might be appalled at such an undertaking; what wonder then that we who were new at the work entered upon it with only a courage forced upon us by the exigencies of the occasion.

As we lingered first over the most beautiful and also the most perishable, we would have failed utterly to reach any conclusions, had the managers not so classified the display of flowers, that we had only to find in each case the most perfect of its kind. There were among the roses and also the fuchsias two or more specimens, quite new and therefore rare, and the display denoted an advanced state of floriculture in the county.

Fortunately we were entirely at home in the more strictly domestic features of the department. The very creditable specimens of rag carpets and rugs could not be judged by the eye alone; the smoothness, closeness and weight had to be carefully inspected, and doubtless the casual observer might not agree with our conclusions, but we were confined to the "best" not the best looking. Knitting puzzled us a little, there being a number of entries almost worthy of the first prize; however, heels, toes and general shaping had to be considered before fancy stitches. There were several sets of pantaloons and vests of unprofessional production. At first the gentlemen of our committee inclined to give the palm to the most pretentious among them, which was not only of the best material and largest size, but was really well made; yet upon close examination of all the seams, facings, and above all, the button-holes, the modest, middle sized suit, came off victorious.

Knit quilts, crochet quilts and quilts of every kind, were quite bewildering, especially the crazy quilts. However such a medley became so popular and enlisted so much skill and patience in its execution, is a problem not easily solved. Here we had to discriminate between the real handwork and the manufactured appliances, which were calculated to deceive the unwary.

The comparative merits of the specimens of darning, gave us considerable trouble to determine, and I would respectfully suggest that it would be better for exhibitors in this class to take a stocking which had gone through a course of wear and darning, until a variety of holes and thin places had shown the capabilities of the darner. To cut a square hole from a stocking and weave into it a filling over so nicely is not the sum of darning. A nice darner must aim at keeping equal strength and thickness throughout; there must be no perceptible edges to the darned place, and there may be need for darning where there is not a thread yet broken; the stocking that is well darned must be smooth inside and outside. There was some very pretty darning, but the stocking which showed the best idea of darning was badly darned because the cotton used was too coarse and it could not make smooth work.

Crochet work in worsted took such an infinite variety of shapes, that had the award been to prettiness we might have been puzzled, but as it was for the "best" it was even more so, and when we had selected from by far the finest display of any one exhibitor a piece upon which she had evidently put her most careful work, it was a little discomfiting to hear a visitor who was doubtless unaware of our proximity, express astonishment that a premium should have been awarded to "that ugly thing."

Upon reaching the finer arts, such as drawings and paintings of various kinds, we were compelled to call upon those who were more competent to decide, and were luckily so fortunate as to find those who were both willing and capable, to kindly help us out. There were a few specimens of real merit, and the entire collection was so far in advance of amateur work of the kind a few years ago, that it promises much for the future. There were other displays of fancy and domestic work, such as embroidery, painting on satin, toilet sets, etc., all of which evinced an industrious community of refined and elegant taste, and this part of the general exhibition was certainly all the board of managers could have desired. The other various departments have already passed the criticisms of newspapers and visitors; of them, therefore, I will not venture to speak.

Our greatest source of gratification lay in the kind friends we were privileged to meet and especially those by whom we were most hospitably entertained; opening we trust the way for pleasant and congenial associations in the future, was much as a *fraternal* bond enters into the calculation.

Here also as not unfrequently happens, I met for the first time some who entertained a friendly regard for your humble correspondent, which reflex friendship it is pleasant to reciprocate.

Fairs of that description are good and useful, and the more we have of them the better for the staid and steady farmers if the generality of them approach that of Montgomery county. I trust there are not many who have lived as long as I without knowing by observation of their value, and I will consider it a misfortune which deprives me of such pleasure in the future.

CERES.

Washing.

Having stepped in at Mrs. B——'s early one Monday afternoon, I was surprised at seeing the room in order and she neatly dressed, notwithstanding Monday was her wash day. I ventured to ask: "How do you get your washing done so soon? I am sure you have enough of it, judging from the amount of clothes your family wear." "Well I will tell you," said she, as she went into another room and brought out her work basket containing some old collars. "Many years ago a friend gave me a recipe for a washing fluid which I have been using ever since, and I shall use it until I find something better to take its place." "What is it?" I exclaimed, for I was anxious to lessen that every-week burden. The good woman gave me the recipe which reads as follows: "Take one pound of washing-soda, two ounces of borax, one cup of lime, six quarts of soft water. Put over the fire and bring to a boiling heat, then let it settle, and bottle it. For washing use one up to every five gallons of water and as much soap as you would use in the ordinary way. Soak the clothes over night in cold water." "Now," said Mrs. B——, "I always soak the clothes the night before. If you do not like to do this on Sunday, you can sort the clothes on Saturday; put the white clothes in the tub (the fine ones on top) and all you will have to do on Sunday evening is to pour enough water on to wet them. I remember hearing a lady say she always put her clothes to soak on Saturday when she did her washing on Monday. I would rather not soak them at all than do this, as I think they would become rancid. If I want to get the washing done early, the first thing I do in the morning is to put the clothes through the wringer, then put the fine ones in the kettle or boiler in cold water, with the fluid and soap, and start the fire. Let them boil about fifteen or twenty minutes, then take them out and put in the coarse clothes. While these are boiling, rub out the fine ones just once, applying soap when needed. I always rinse my clothes out twice, and this is the way I have been doing my washing for many years and have not had cause to change."—*Rural New Yorker.*

A Card Case.

Very pretty little pocket-cases for holding calling cards can be made from bits of satin and silk, and are far more dainty to use than the heavy ones of leather with their gold or silver mountings.

The silk and satin can be chosen from as delicate colors as may be fancied, but the one we shall describe was of black satin lined with a pale shade of lilac silk. The materials required for its construction were a piece of light quality bristol-board four and one-quarter inches long by five inches wide, a strip of the satin four and one-half inches long by ten wide, and silk the same size as the satin. Fold the piece of bristol-board exactly in the middle, so that each shall be two and one-half inches wide; cover it smoothly with the satin for the outside and the silk for the lining; as nothing will be used on the edges, they should be joined so neatly that no stitches can be seen. Care should be taken that the exact middle of the cover and lining is at the fold of the bristol-board, then fold in the ends of the satin and silk extending beyond the stiffening to within a half inch of the center, this forms the place in which the cards are slipped. When the edges are neatly fastened press the case together and place for a while under a weight so that it will be pressed flat and smooth; then on one side of the cover paint in a diagonal position a cluster of Lilies-of-the-Valley, and on the other, some Forget-me-nots.

Plain white cards with or without beveled edges, and having the name in plain script, are always in good taste; the engraved copper-plate used for printing these can be obtained for $1.50, including fifty printed cards, and from this place as many more as you may desire can be printed for fifty cents a packet. C.

WICKER work baskets are prettily trimmed by weaving in the openings inch-wide satin ribbon of a cardinal color. A row of this should be threaded around the bent-over rim by putting the end of the ribbon through one opening, over one, and pull it through the third to the under-side again, spreading out the ribbon on the upper-side the full width in the center; weave the ribbon in this way all around the edge, and join the ends on top with a little bow. On the opposite side of the basket fasten a little square cushion, for pins and loose needles, with a piece of the ribbon placed diagonally around it and tied in a bow to the basket-edge. Unless the bottom of the basket is very firm and close, fit a pasteboard exactly to it and cover neatly with silesia of the same shade as the ribbon used. Inexpensive little baskets for holding thimble, thread and scissors can be made very ornamental in this way.—*Floral Cabinet.*

Self-Care While Nursing.

To those who are called upon to nurse the sick through a long and severe illness, it is of the utmost importance, not only to themselves, but to their patient, that their own health should be preserved and their own strength maintained, not only throughout the critical stage, but during the period of convalescence, sometimes so tediously prolonged. To all such we submit the following simple precautions, to aid them in preserving their own health while attending the sick.

If the malady of the patient be such as to cause any marked odor of the breath or noticeable exhalations from the skin, take care always to sit on the side of the bed or sick person which is opposite to or away from the direction which the effluvia takes toward the windows or draft of a fire-place Sit so that their breath, etc., is carried away from you. Do not sit too close to them, or take their breath if you can avoid it.

To keep one's own strength in a case of prolonged care, and particularly if obliged to sit up all night for many nights in succession, great benefit will be derived from taking a warm bath early in the morning; or if the disease be particularly infectious in its nature, it is best to change the underclothing every morning. It will be found that the warm bath, followed by brisk rubbing of the whole body with a Turkish towl, will refresh the wearied body almost as much as sleep.—*Christian Union.*

Speak of the Pleasant Things.

A woman who was much beloved, and who carried happiness with her wherever she went, was at last found to have a very sorrowful life and many trials. "How do you manage to be so cheerful?" Some one asked. "It may be, in part, the result of an agreement we had at home after we lost our property, and sickness and separation came; we agreed that when we were together after the work of the day, we would talk only about the pleasant things in our lives, or the cheering and agreeable things we had heard or seen. It soon became surprising how much that was pleasant we had to speak of and relate. I think it has become a habit with us all to dwell on the bright side." Was it not a good habit for many of us? Often the father, or other burden-bearer of the family comes home weary at night, to hear only complaints and other things of an unpleasant nature in the evening hours of relaxation. Speak of the pleasant things.—*Weekly Witness.*

Domestic Recipes.

SPONGE CAKE.—Take one cup sugar, one heaping spoonful butter, three eggs, one-half cup sweet milk, (new milk is better) one teaspoonful extract of lemon, two teaspoonsful baking powder, flour enough to make a stiff batter.

JELLY CAKE.—Bake the above recipe in one long tin; when done, spread with jelly and roll up, or bake in three tins, when done spread jelly between each layer, icing the top if desired.

CREAM CAKE.—make the same as for jelly cake. For dressing, beat one egg with three-fourths cup of white sugar; stir in one-half cup of butter and one-half cup of milk or sweet cream; heat to the boiling point, and add one tablespoonful of corn starch previously stirred in milk; stir until free from lumps, being very careful not to scorch it; when cool, add flavoring to suit the taste; (vanilla is good) spread this between the layers, icing the top if desired.

COCOANUT CAKE.—Make the same as for jelly cake, leaving out the whites of two eggs. For dressing between layers, take the whites of two eggs, beat to a stiff froth, and add one-half cup of white sugar, spread this over each layer, and sprinkle thickly with cocoanut; also apply some dressing to top and sides.

CHOCOLATE CAKE.—Make the same as for jelly cake and dress the layers with the following: Take one tablespoonful of chocolate and melt it with a gentle heat; take one and one-half cups of white sugar, and add to it two tablespoonsful of water, and allow it to come to a boil; beat the whites of two eggs to a stiff froth, stir rapidly into this the syrup while yet hot; then stir in the chocolate thoroughly and set aside to cool.

LAYER FRUIT CAKE.—Take one cup of sugar, one tablespoonful butter, yolks of three eggs, one cup of raisins or currants, one-half cup sour cream, one-half teaspoonful saleratus, one teaspoonful vanilla, flour enough to make a stiff batter. Bake in two tins. (2d part) Make the same as for jelly cake, leaving out the white of one egg, and bake in three tins. When done put alternate layers of each, with a dressing of the following: Whites of three eggs beat to a stiff froth; add one-half cup of sugar. Spread the top and sides with the same.—*Housekeeper.*

Forensic Veterinary Medicine, so far as it bears on the Exclusion and Suppression of Contagious Diseases.

A paper read by Dr. Ward, F. R. C. V. S. State, V. S., at the Quarterly Meeting of the Maryland Improved Live Stock Breeders' Association, at the Carrollton Hotel, Baltimore City, Nov. 14th, 1881.

Mr. President and Gentlemen:

Your Secretary sometime ago solicited me to prepare a paper for you at this meeting. I promised I would do so, and I selected Forensic Medicine for my subject, so far as its bearing went in relation to Veterinary Science and Police. I have however digressed from my course somewhat, so that I might bring my subject clearly before you, as it holds a most important bearing on the act you have prepared for the Legislature on Contagious Diseases in animals and their suppression in Maryland.

History tells us, that in all countries the first legislative measures adopted for the suppressing of contagious diseases, whether among the human family or animal proved abortive, inoperative, or totally inadequate, half measures being generally adopted, and too much dependence being placed in moral laws.

With this evidence before us, and the sad results which followed the half-measure policy abroad, the Executive Department of this State must feel that what action is taken, must be of a thorough nature; the expenditure should be second to the thoroughness, and it must be held the first expenditure means the commencement of economy. Compulsory laws alone, I am fully convinced, will ever rid this State of these frequent visitations, for under moral laws we find that, whereas one stock-owner finding his herd affected, led by a sense of duty to his neighbor, guided by his moral courage, gives immediate notice to the legally constituted authorities, and thus the ravages are checked at the onset: but it is not so with his neighbor, who, as soon as he finds an animal or two affected, sells or trades the remainder at the earliest opportunity, and thus sows the disease broadcast to the serious damage of his neighbor's stock, and others in the vicinities through which these animals may pass in transit. After serious losses and dearly bought experience, the legislature of these countries to which I refer realized the fact that unless measures of the most stringent nature were adopted, the live stock of their countries would be swept away—after millions of money had been wasted, the live stock owners and breeders ruined, or nearly so, and animal food placed out of the reach of the masses from the high tariff. The dearly bought lesson was taught that restrictive measures must be fully organized, and that too under an efficient staff of qualified veterinary inspectors.

The veterinary profession was called to its duty to its country, and put to its test of merit, and made responsible for itself, and time has proved the result to be of the most happy and satisfactory nature in so far as those countries are concerned.

Instead of diseased or infected animals being permitted to be driven about, or roam at large, driven by the dealers in this class of animals, or shipped to distant parts by rail, the penalty was of such a burdensome character, that the risk was too great for the speculator, and again the seller was brought under the influence of the risk attending the removal of infected animals from his premises. Thus a healthy check was placed on one of the most baneful causes of extension.

The act which has just been read shows itself to be all or nearly all that can be desired, not a whit too severe if it is to be of any value, provided always that its measures are faithfully carried out without equivocation or mental reservation, but the act should be in force in all the States, with the strictest regulations for inspection of animals intended for transit to or through other sister States.

There is, I think, need for some definite system of cleansing and disinfecting of the Cattle Scale Yards and Pens, and cattle trucks, which I take it, should be included in the act, that it shall be compulsory; for this has been found expedient in Europe.

Of the diseases affecting the Bovines that are most to be dreaded is Rinderpest, which fortunately for this country has no location, but the Bovine scourge, Pleuro-pneumonia has for several years given great annoyance and heavy losses. It appears from history, that this disease was first reported in Central Europe, and during the last century created great trouble in Germany, Switzerland and France. In 1802 Prussia was invaded, and it spread rapidly to Northern Germany. The first report we have of it in Russia is in 1824, we next find it appeared in Belgium in 1827, then in Holland in 1833, and invading Great Britain in 1841, finding its way into Sweden in 1847, into Denmark in 1848, and Finland in 1850, reaching South Africa in 1854, at the Cape of Good Hope. The United States was invaded in 1843. The first outbreak being at Brooklyn in that year. It next developed itself in New Jersey in 1847, and again in Brooklyn in 1850, and in Boston in 1859. Since which time various adjacent States have been visited by outbreaks at different periods up to this present.

I mention this, the earliest records of the disease, so that you may follow its geographical distribution to the present time, and I will draw your atttention to the fact that in Hungary, Normandy and Algeria it is almost unknown, and this is attributed to the fact that there is little or no importation into these countries, a fact of some importance, be it noted, bearing on spontaneous development in this disease.

Pleuro-pneumonia contagiosa is a most subtle specific or contagious disease belonging to the Bovine race. The invasion of it is most insidious and the contagium highly potent. The disease is classified as as one of the sub-acute or chronic nature, and by contagion alone is the disease disseminated.

Some authorities have asserted that the disease can be developed *de novo*, under certain influences, but the *data* need some clearer rendering to lead the highest authorities to follow them in their views. For these influences have been in existence and in operation in this country for centuries, and in some regions the disease is unknown. It is an accepted theory, that contagious diseases are due to disease germs which are physiologically speaking, a true seed, identical with an animal or vegetable germ, and, like all living organisms has its development and its decay. These germs are not to be taken as a product of disease, their presence producing that disease characteristic to them. Thus the germ of small-pox poison develops that disease, and the patient by contact introduces the germ poison to his fellow-men, the result being small-pox, and the same law obtains with animals, and the contagious diseases which affect them.

These disease germs being present, as seeds as it were, and need only a cause to develop their activity, and finding their way into the animal economy fructify, and those phenomena develop which characterise the particular morbid changes due to the specific germ poison, that is, if we may term the germ a poison, which like all living organisms, reside side by side with animals.

Now accepting these facts, as I have stated them, the spontaniety theory cannot be held intact, for when an outbreak happens, these disease germs are there; it would be just as possible for a field of wheat or barley to develop itself without its seed. Therefore this being so, we find ourselves possessed of a factor of disease germs, "in an animal infected," and is it not plain therefore, that such "factor," should be isolated, or better still, if the number of animals are few that have been exposed to the contagion destroyer, and thus stamp out the disease at once rather than risk its diffusion. Whilst I speak on this point, I will with your permission, read an extract I have here, from an essay read by Prof. Walley, of Edinborough, no mean authority on cattle pathology and contagious diseases.

I will just mention that the first stages of this disease, may continue for a fortnight or three times that period, and that it is when passing from the first to the second stage that we have the most dangerous influence of the contagion to other animals, for the owner may fail to apprehend the nature of the illness, and then it is that other animals become exposed to the influence of the germs. During the first stage, the affection may at times terminate in recovery or partial recovery, but the altered structure of the affected lung tissue, is rarely if ever restored. Convalescence is slow and tardy extending over months, during which period the animal may infect others. It is asserted, the air holds the infected element for the space of 50 to 100 feet.

Healthy cattle have been known to contract the disease, by being housed where affected animals had been 3 or 4 months previously. Hay and fodder from sick quarters convey the infection after a long period, and the same applies to pasture; the flesh also is a source, and it is reported that carcasses improperly buried, have infected animals at a distance of 50 to 60 feet away from the place of burial.

A word about the idiosyncrasy of animals to take on the disease. It has been found that 15,20, even more per cent. escape the infection in a given period. As to the losses in some instances, the death of 15 to 20 per cent.; may occur, at others, we have 70 per cent.; in mild outbreaks we may compute the loss from recorded statistics to be 20 to 25 per cent. and in the severe form 70 to 80. In countries where slaughter is carried out the average is 60 per cent.

I think I have now said sufficient to bring the serious nature of this *one* of the several contagious maladies clearly before you and the public, so that it must realize the importance and the value of the new bill you desire to make law, and I am sure it will go with you to the Legislature.

Leaving pleuro-pneumonia, I will now speak on some of the other diseases affecting stock.

Tuberculosis and Texas fever—The anthracoid disease. Tuberculosis is a most contagious malady, dangerous alike to the human family, yielding pthisis or pulmonary consumption. Measures for stamping out this disease are sadly needed.

Texas fever brings in its wake most serious consequences, and every care should be exercised to arrest animals passing through the State supposed to hold this infection.

In the equine race, the horse suffers from one of the most malignant, insidious and dangerous diseases known among animals. Glanders, with its modified form farcy, which disease is communicable to mankind, with the saddest results, death and a most agonizing one it is, for it has been my misfortune to have more than one case brought under my notice in practice.

My attention has been directed to cases in this city, and I was surprised to find I had no power over this disease, other than the moral influence I brought to bear. This should not be so in a country boasting of and possessing the finest horses in the world.

In Europe the laws on this disease are most severe, and justly so, imprisonment without a fine for exposing an animal affected.

The contagium of this disease, is most potent and insidious, therefore needs strict legislative measures to keep it in check. Your act covers this disease, and I hope those who may own suspicious horses will be induced by it to have a qualified opinion thereon ere the law comes into operation.

In conclusion, gentlemen, I say a few words about my inspectorship and its results since your last meeting.

I am gratified to report that no member of this association has needed any service other than for ordinary cases, and that as far as I have been among your valuable herds, I am satisfied of their excellent health.

With the exception of the recent outbreak, I have only found five cases of lung disease and those were of the chronic form, and in various parts of the State. I also traced a chronic case from the cattle scales to a butcher's slaughter-house. I found one animal in a garden belonging to a dairyman living on the city boundary, she was in the last chronic stage and gradually wasting.

I am satisfied that most of the trouble lies with the small dairies near the city, and this your act will rectify.

I will mention also that information reached me that the disease existed in one of these small dairies, and that on my visit I was refused admission and threatened with dogs if I called again; this is the first and only molestation I have experienced since I took the duty of inspector.

The present law, if such it may be termed, is utterly useless, in the last degree, for the suppression of contagious diseases; therefore, under it, my duties have been rather arduous, and at the same time unsatisfactory to me, because I find I am unable to cope with the details for suppression of this disease. From what I have said you can see the fact that pleuo-pneumonia has been running riot over the stables since 1843, and here in 1883, exactly forty years, we are now discussing the desirability of introducing some stringent laws for the suppressi n or extinction of the disease. I trust it will be seen that the present state of things has been going on so long, so that the action you have taken to amend the half-measure law existing by the introduction of such as will, if properly administered, have the desired effect. Quarantine laws are very well, when the animals are under close observation of the qualified Inspector, but when left to the honesty of most people, it is most hazardous; indeed it is the most expensive course, for a number of Inspectors will be needed to carry out the system in a proper way, and that it will not be so satisfactory as the more economical one of slaughter, and which I am fully persuaded, is the most effectual way to bring about the extinction of this plague in Maryland.

The Inspector of the cattle at the scales is a very unsatisfactory duty, as at present arranged. I do hope to see some improvement here at an early date. As you are aware, gentlemen, there is a convention to be held at Chicago, to-morrow and the day following, instituted by the U. S. Board of Agriculture at Washington, to which I have been invited as your representative by Dr. Salmon, instructed by Dr. Loring, the Chief Commissioner. I will read the letter to you. To it I replied, stating that I would bring the matter before the Governor and your societies, and I have done so. I further replied that I should endeavor to be present, and should be ever willing to do my best for the State in the matter under review. I regret to say that I am not able to be there, if I could be of any service to the State; but I do hope that some one better able, but not more willing, has or will be deputed to the duty, for I feel that Maryland should be represented at the convention.

J. M. Laroque's Anti-Bilious Bitters for dyspepsia, headache, &c. 25 cts. a paper. $1 a bottle.

WHITE RIVER, W. T., Oct. 21, 1881.
Dr. J. C. Ayer & Co.—Gentlemen: My wife suffered for over twenty years with rheumatism in her hips and legs. On reading your almanac she positively believed that your sarsaparilla would cure her. She has taken four bottles and is now as well as ever she was in her life. I feel it my duty to send you my sincere thanks.—C. ENGBLORN.

No medicine is half so good for a great variety of family complaints, as Ayer's Pills. They are easy to take, effective to cure, and are cheap and handy.

Baltimore Markets—Nov. 16.

Flour.—The demand is moderate and the market is quiet but firm, with an ample offering but no pressure to sell. We quote as follows: Howard street and Western Super, $3.00@$3.50; do. Extra, $3.75@4.75; do. family, $5 00@$5.75; City Mills Super, $3.00@3.75; do. Extra, $4.00@4.75; do. (Rio Brands) Extra, $5 75@6 00; Baltimore Winter Wheat Patent $7; do. High-grade Family, $6.50; do. Second-grade Extra, $6 25; do. Third-grade Extra, $6; Fine, $3.75@3; Rye Flour, $3.75@4; Corn Meal ₩ 100 lbs. $1.35; Colbert's Excelsior Graham, $7.

Wheat.—Southern Wheat is more freely offered, but the demand is fairly active and the market is steady. Inferior to fair samples sold at $1.09@1.10, and good to choice at $1.11@1.15 for Fults and $1.13@1.17 for longberry. The market for Western Wheat ruled inactive, but a shade firmer, and closed dull and steady. The closing quotations were as follows: Spot, No.2 $1.08@1 08¼; December, $1.09¼@1.09¼, and January, $1.11¼@1.11¼.

Corn.—The market for Southern Corn is firmer under continued light offerings and fair demand. White sold at 60 cts. for old and 53@57 cts. for fair to prime dry new. Yellow ranged from 53@57 cts., as to condition. Western Corn is quiet but steady. The closing prices were: 57¼@57¼ cts for Spot, 57¼@57½ cts. for year, and 57@67½ cts. for January.

Tobacco.—*Leaf*—Maryland continues active, but transactions are restricted by small stocks and receipts. New Ground Leaves in good demand at full prices. We quote: Maryland inferior and frosted, $2@3; do. sound common, $3 50@$5; good do $5.50@6 50. do. Middling, $7.00@8.50; do. good fine red $8.50@$11; do. fancy, $12@$14; upper country, $4.00@$16.00; do. ground leaf, $5@7. *Ohio*—Sales of Ohio brands, principally for export, at full prices. We quote as follows: Inferior to good common, $4@6; greenish and brown, $6@7.50; medium to fine red, $7.50@10; common to medium spangled, $7@10; fine spangled and yellow, $11@16; air cured, common $4@6; air cured, medium to fine, $7@15.

Live Stock—*Beef Cattle.* The market has generally been dull, more particularly for good butcher Cattle and common stock, but a trifle more active for feeders. The quality was about equal to that of last week's offerings. Prices of Beef Cattle ranged as follows: Best, $5 62½@6; that generally rated first quality, $4 25@5 25; medium or good fair quality, $3.25@4; ordinary thin Steers, Oxen and Cows, $2.25@3; most of the sales were from $3.75@5.37½ per 100 lbs.

Swine.—Prices were scarcely as high as last week, few, if any, selling at top figures then. We quote rough Hogs at 5½@6 cts., and the better grades 6¼@6¾ cts. per pound net, with a few extra a shade higher.

Sheep and Lambs—The offerings this week show an increase over last week's receipts, with little or no outside demand. Trade is generally slow. We quote butcher Sheep at 3@5 cts., and Lambs at 4@6 cts. per lb. gross; stock Sheep, $2.75@3.25 per head for Ewes, and 4@4½ cts per lb for Wethers.

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ARE prepared, with great care, from medical plants; are *coated with sugar*, that they may be taken by the smallest child and upon the most delicate stomach; are intended especially to act upon the Liver, thereby relieving all such diseases as COSTIVENESS, HEADACHE, PARALYSIS, DYSPEPSIA, COLDS, JAUNDICE, and all diseases of a bilious origin. No better evidence can be offered in favor of these Pills than the very fact that where their ingredients are known to family physicians, they are using them in their private practice. We append the following from one of our most prominent physicians:

OAKLAND, June 28, 1869.—*Dr. Gilpin:* After carefully examining the formula of your Sugar-Coated Pills, I feel it but justice to say that the combination is certainly perfect, and comprises the only remedies I ever believed were the proper ones to be used in diseases of a bilious origin. I shall take pleasure in recommending them, not only to my patients but the entire medical profession. Yours truly, J. M. WISTAR, M.D.

From one of the leading retail druggists of West Virginia:

WESTON, W. VA., June 18, 1869.—*Messrs. Canby, Gilpin & Co.*—Gents: Please send by express twelve dozen Gilpin's Vegetable Liver Pills. I have the most flattering accounts from all who have used them, and believe the day is not far distant when they will supersede all others. Yours, F. M. CHALFANT.

We could fill several pages with certificates, etc., from prominent men throughout the country, but prefer to let the Pills in the future, as they have in the past, rest entirely on their own merit, knowing that wherever they are known their use will pass down from generation to generation.

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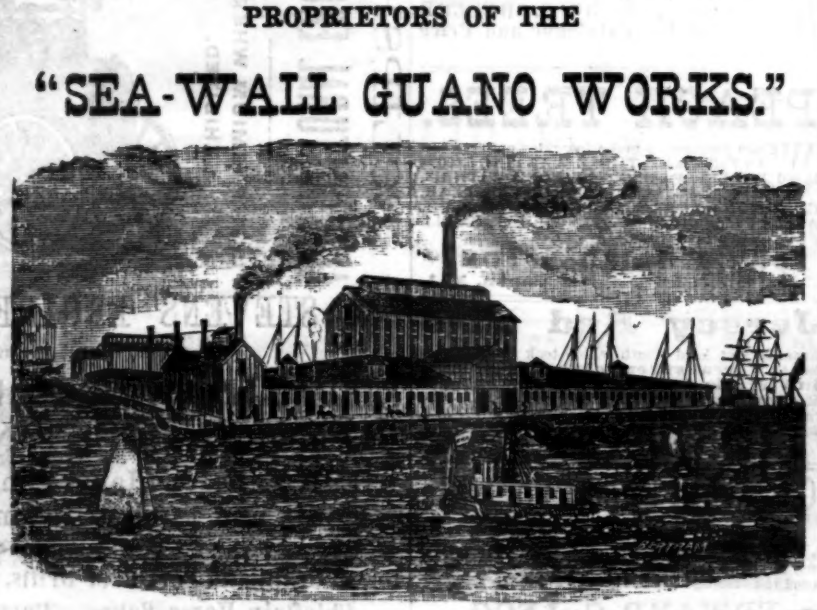

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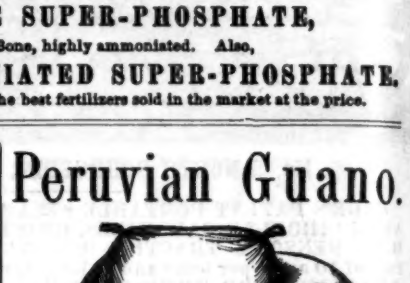

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